how to plan accidents away (SEE PAGE 15)

Safety Maintenance

EST. 1901 • AMERICA'S PIONEER MAGAZINE IN ITS FIELD • MAY, 1957 • 50¢

Published By Alfred M. Best Company, Inc.

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Dusty Jobs These Economical

Protection from Dust

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R9100 Respirator — This remarkable unit is the lightest, least expensive respirator on the market today. Complete Bureau of Mines approval for protection against pneumoconiosis-producing and nuisance dusts.

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COMPANY
SAFETY PRODUCTS DIVISION

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(For details, use Key # D-1 on card on page 73)

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CLEARVIEW VISOR GOGGLES
MODEL No. 1
WITH SCREENED PORTS

WITH JONES FULL VISION VISOR GOGGLES

WITH ALL THESE EXCLUSIVE FEATURES . . .

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Safety Maintenance

formerly "SAFETY ENGINEERING"

Volume 113, Number 5 **May, 1957**

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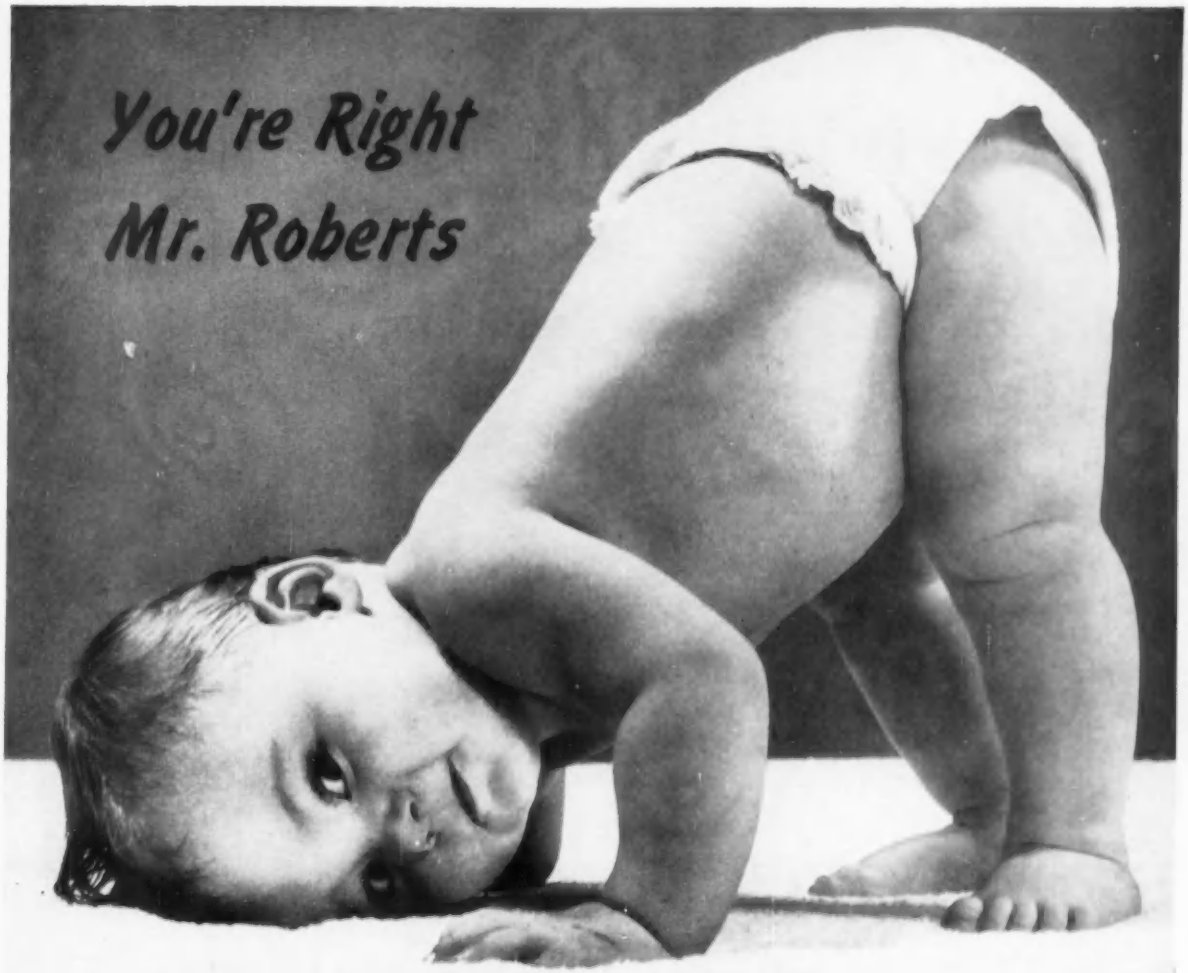

"The wrong way to look at a plant safety program."

Mr. H. Armstrong Roberts took this photograph for Occupational Hazards ©1957

Safety glasses make sense. A single large industrial company reports that – over a four-year period – 156 employees saved an eye because they were wearing safety glasses. But dirty glasses are a terrible hazard. And 10 times as many accidents arise from lack of proper vision as from injuries to the eye. In fact, one finding shows that 68% of employees frequently injured had poor vision.

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Good news for everyone who works where there's danger of Heat Fatigue!

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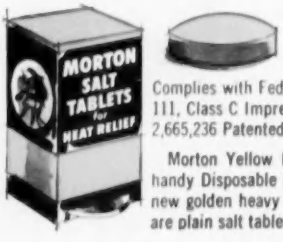

Complies with Federal Specifications SS-S 31f for Type III, Class C Impregnated Salt Tablets. U. S. Patent No. 2,665,236 Patented 1954 (Canada) No. 501,316.

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Safety is made attractive...vivid...colorful...

each worker clearly sees how safety benefits him.

You get enthusiastic safety cooperation instead of

tolerance...from every employee...every month.

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Safety News
PUBLISHED IN THE INTEREST OF YOUR SAFETY
THE JOHN DOE COMPANY, INC.
PROTECT YOURSELF
3
WAYS
There are three safe practice ways that do the most good in keeping free of accidents, all based on your personal desire to know safety and keep yourself safety-minded by studying the hazards of your work. They are
1 Make sure all guards are in place and working and wear the personal protective equipment your job requires.
2 Learn the safe way to do a job and do it just that way.
3 Report, avoid or eliminate all unsafe conditions.
As we see it: Safety is part of every job and like any craft it requires skill.
John Doe

Size 8½" wide x 8½" deep

...talks the worker's language!

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Every employee feels bucked-up by a note from the boss. If you desire, your facsimile signature can be printed here.

Your Signature Here

NOTE:

Your Safety News is designed to promote better employer-employee relations. Every item is carefully weighed from this viewpoint.

INSIDE PAGES
(pages 2 and 3)

So Goes the World
Lions & Machinery have Hungry Jaws
NEVER REACH INTO MACHINERY WHILE IT IS RUNNING!
Guard Well
WANTED
from the CARELESS ACTS of others the WISE MAN corrects his own
SAFETY SHOES
WORK OVERTIME
Dress for Safety
SAFETY SHOES
FALLS
FALLS KILL 60 EVERY DAY

IN YOUR EMPLOYEE'S INTEREST

Your employee's self interest in his own safety is always emphasized. Even household hazards are covered to keep him safety-conscious every minute, not only in the plant, but at home and on the way to work.

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Artwork is carefully chosen to lodge home each point. The cartoon style makes YOUR SAFETY NEWS as familiar and as welcome as the Sunday supplement.

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Generous use of color gives sparkle, adds to the attention-riveting qualities of YOUR SAFETY NEWS. Each issue is as lively as any news-stand favorite.

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NOTE: Although a personal signature is effective, some firms substitute: SAFETY DEPARTMENT, YOUR SAFETY COMMITTEE, A SAFE WORKER, etc.

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A head-set suspension type, for persons who must enter noisy areas for brief intervals, then return to a normal noise environment. Quick and easy to put on, take off. One size insures universal fit.

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We will be most happy to apply this knowledge to your needs. And if you would like us to send you our booklet, *Noise—Questions and Answers*, just write. Your request will be handled promptly.

MSA

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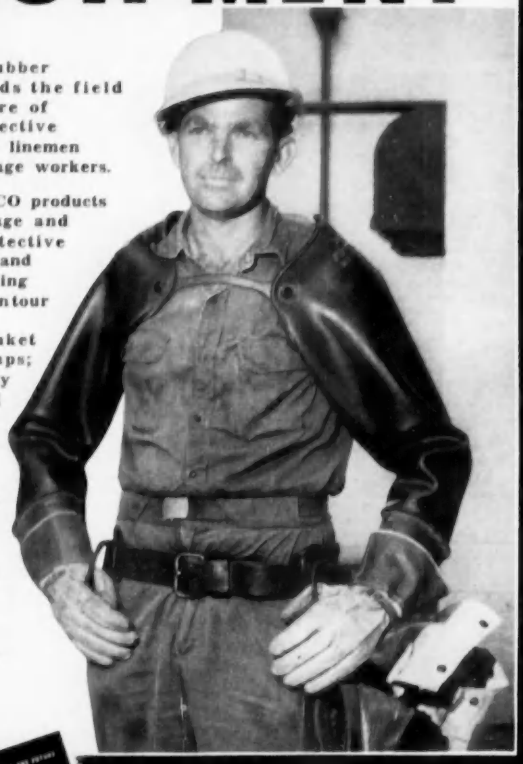
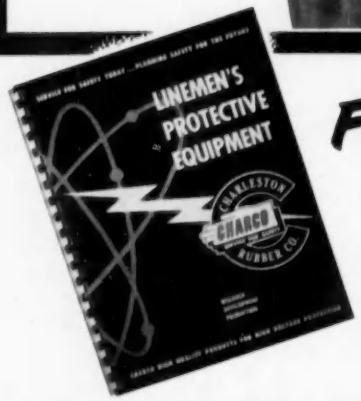
(For details, use Key # D-5 on card on page 71)

ELECTRICAL PROTECTIVE EQUIPMENT



Charleston Rubber Company leads the field in manufacture of superior protective products for linemen and high voltage workers.

Among CHARCO products are: high voltage and linemen's protective rubber gloves and sleeves, including FLEX-SAF Contour Cuff Gloves; "Bulldog" blanket and wire clamps; "Bulldog" utility flag clamp and danger flags; "Charcote" water repellent spray; low voltage gloves; glove protectors and innerliners; canvas storage bags; danger flags; flag standards and other products for safety.



FREE **32-PAGE LINEMENS PROTECTIVE EQUIPMENT CATALOG**

This new illustrated catalog, for use in public utility and industrial electrical fields, tells of the company's program of constant laboratory research and explains how CHARCO protective equipment is carefully manufactured and tested. It describes and illustrates many products and gives concise instructions on proper care and use. Also it lists valuable technical reports available free from the company, including the 18"x22" Glove Care Poster.

ALSO INDUSTRIAL PROTECTIVE EQUIPMENT CATALOG
INDUSTRIAL PROTECTIVE EQUIPMENT INCLUDES: SYNTHETIC RUBBER GLOVES, NATURAL RUBBER GLOVES, APRONS AND SLEEVES FOR CHEMICAL WORKERS, SAND-BLASTERS AND METAL WORKERS

CHARLESTON CHARCO SERVICE FOR SAFETY RUBBER CO.

CHARLESTON RUBBER COMPANY
31 STARK INDUSTRIAL PARK CHARLESTON, SOUTH CAROLINA

(For details, use Key # D-6 on card on page 73)

CHECK LIST of aids to production

Through Safety—

Mine Phones 19
Safety Goggles 20
Industrial Wipers 25
Wire Rope 32
Heat Resistant Mittens 36
Plastic-Coated Gloves 36
Non-Slip Gloves 36
Heat Resistant Fabric 36
Acid Resistant Gloves 37
Seamless Finger Guard 37
Aluminized Asbestos Cloth 37
Chemical Resistant Suit 38
Lightweight Asbestos Clothing 38
Durable Latex Gloves 38
Heat Resistant Fabrics 38
Neoprene-Latex Clothing 38
Chemical Resistant Gloves 39
Non-Slip Gloves 39
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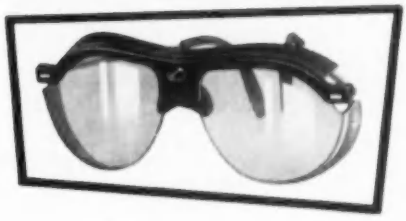
Butt Snuffer 75
Dacron-Lines Fire Hose 77

DO YOU NEED
all around
EYE PROTECTION?

YES ☐
NO ☐

if you checked **YES,** *you need*

VISOR-TUC
SAFETY SPECTACLES



Visor fits snugly against the forehead to provide over-eyes protection from glare and flying particles.

Shatter-proof, heavy-duty lenses meet Federal Specifications for the "drop ball" and "drop needle" tests.

Cup-type Lenses prevent entry of particles from side or bottom.

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232 West Exchange St., PROVIDENCE 3, R. I. *In Canada: Levitt-Safety Limited, Toronto 10, Montreal 26, Winnipeg*

(For details, use Key # D-7 on card on page 73)

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• LABOR UNIONS AND SAFETY

WHILE conflicting opinions, interpretations and basic viewpoint may exist in many areas of management-labor relations, it can be assumed that the mutual benefits of industrial safety are apparent to all concerned.

Nowhere is this agreement more in evidence than in union contracts covering a vast number of union employees whose employers were quick to include provisions for the prevention of industrial accidents.

More than half of the larger union contracts in the files of the New York State Department of Labor in 1956 contain provisions dealing with the safety of employees, not counting provisions restricted to sanitation and first-aid.

Industries in which a majority of the union contracts on file contain definite safety provisions are those manufacturing chemicals, transportation equipment, primary and fabricated metal, machinery, paper, scientific apparatus and construction. We can look forward confidently to the day when every single union contract in every industry in the 48 states will recognize the possibility of accident and include the proper precautionary provisions.

The absence of safety clauses in existing contracts does not indicate indifference to accident prevention on the part of either management or unions. In some fields, such as certain branches of the public utility industry, unions may consider there is no need to negotiate safety clauses because employers already have developed safety rules and practices. Also unions have developed safety rules of their own and employers signing contracts understand that their union employees will comply with such safety procedures.

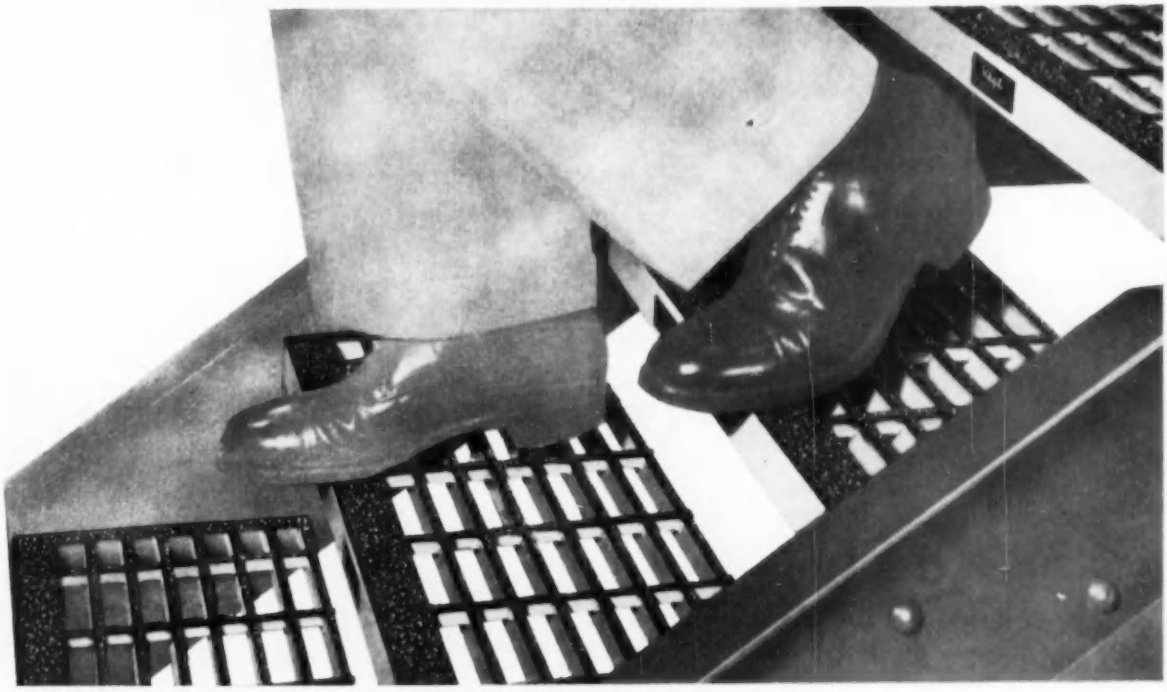
Many contracts spell out the obligation of employee as well as employer. Among the specific commitments in union contracts are requirements that employers install or furnish safety devices, furnish all necessary protective clothing and maintain safe working conditions while the union pledges worker compliance with all safety rules.

The contract of one union of electrical workers specifically provides for first-aid kits and requires the company to furnish rubber blankets, protective gloves, coats, safety hats and rubber boots to protect employees from injury.

★ ★ ★

Management and labor may differ in their approach to wages, hours, duties, fringe benefits, etc. But it would be difficult to conceive of any dispute concerning the value of safety practices. Progressive management long ago established itself in the forefront of the safety movement. Conversely, any union sincerely interested in the welfare of its members—and continuity of dues payments—would be shortsighted indeed to neglect any practicable approach to accident prevention. Unions can go one step further, it would seem, if they would follow the lead of management by encouraging, among the dues-paying members, a more active interest in off-the-job safety as well. H.A.

Eliminate slipping accidents!



Relgrit Abrasive Embedded Grating Treads

Industrial plants throughout the country have found that Relgrit has practically eliminated slipping accidents wherever used.

Relgrit treads are made with an aluminum oxide abrasive, embedded in a "V" groove at the top of the grating bars and nosing. This forms a skid-proof surface that is virtually immune to wear; providing *permanent* protection from slippery surfaces due to water, mud, oil, grease, acids and chemicals. Relgrit is also made for platforms and all other grating areas.

For above Free Sample and Literature write to Dept. E

You can't slip on Relgrit

RELIANCE STEEL PRODUCTS COMPANY

McKeesport (Pittsburgh District) Pa.

Offices and Agencies throughout the country

Relgrit Grating Bridge Flooring

(For details, use Key # D-8 on card on page 73)

TESTS SHOW YOU'RE SAFER with ACME

. . . . the Gas Mask that Gives You MAXIMUM USABLE VISION

Vision-scope tests made with leading industrial gas masks prove that ACME Full-Vision Gas Masks lead the field in giving the wearer clear, undistorted vision—up, down, and to either side. Along with maximum usable vision, the ACME provides greater comfort, less fogging, minimum breathing resistance and acceptable conversation transmission—all at down-to-earth prices. Write for Bulletin No. 562 on Vision-scope tests and Bulletin No. 541 on gas masks.

ACME PROTECTION GUIDE LISTS 433 GAS HAZARDS AND HOW TO OVERCOME THEM

This practical guide is a *"must"* for industrial hygienists and safety engineers. It lists 433 hazardous gases, mists, fumes, smokes and dusts along with the ACME gas mask equipment to overcome each specific hazard. Write for Bulletin No. 542.

ACME PROTECTION EQUIPMENT COMPANY
1253 KALAMAZOO STREET
SOUTH HAVEN, MICH.
(Use Key # D-9 on Inquiry Card on page 73)

Niagara Falls, N. Y. *May 8–9*

Seventeenth Western New York Safety Conference, in co-operation with the American Society of Safety Engineers (Niagara Hotel). Patsy E. Gismondi, Executive Secretary, 1436 Delaware Ave., Buffalo 9, N. Y.

Baltimore, Md. *May 9–10*

Annual Governor's Safety-Health Conference and Exhibit (Lord Baltimore Hotel). Joseph A. Haller, executive chairman, Safety Conference, Maryland Dept. of Labor and Industry, 12 E. Mulberry St., Baltimore, Md.

Winston-Salem, N. C. *May 9–11*

Twenty-seventh Annual North Carolina Statewide Industrial Safety Conference (Robert E. Lee Hotel). H. S. Baucom, Director of Safety, North Carolina Industrial Commission, Raleigh, N. C.

Garden City, L. I., N. Y. *May 14*

First Annual Nassau-Suffolk County Safety Convention and Exhibition (Garden City Hotel).

Gary, Ind. *May 16–17*

Thirty-fourth Annual Midwest and Greater Chicago Safety Conference and Exhibition (Hotel Gary). Greater Chicago Safety Council, 10 N. Clark St., Chicago 2, Ill.

Los Angeles, Calif. *May 20–24*

Sixty-First Annual Meeting of the National Fire Protection Association (Hotel Statler). Robert W. Schuette, Pub. Rel. Mgr., National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.

Duluth, Minn. *May 23–24*

Thirty-Third Annual Conference, Lake Superior Mines Safety Council. Allen D. Look, secretary, Lake Superior Mines Safety Council, 329 Federal Bldg., Duluth, Minn.

New Haven, Conn. *June 4–5*

Twelfth Annual Connecticut Safety Society Conference (Jewish Center Bldg.). Dennis J. Hickey, Manager, Waterbury Mfg. Co., Waterbury, Conn.

San Francisco, Calif. *June 11–13*

Third Western Plant Maintenance & Engineering Show (Civic Auditorium). Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

York Harbor, Me. *September 12–13*

Thirtieth Annual Maine State Safety Conference (Marshall House). Arthur F. Minchin, Secretary, Department of Labor & Industry, State House, Augusta, Me.

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Does work of four 16" machines

This giant new MULTI-CLEAN 31" Floor Machine is the *world's biggest* . . . and an almost unbelievable time-saver for the man who really wants to cut down his cleaning costs.

With its brushing area of 855 square inches (compared with 201 for a 16" machine), it will only require 30 minutes to polish 10,000 square feet of floor!

For example, if your floor now requires one hour to scrub, polish or steel wool with a 16" machine, you'll find that with the new MC-31 you'll be able to do the job in approximately 15 minutes. If you are now using a 12" or 14" machine, the saving will be even greater.

At normal wage scales, a saving of $700 a year isn't unusual!

Operates Easy as a 12" Machine

Despite its huge size, the MC-31 is quiet, smooth-running, and as easy to operate as a standard 12" machine.

Sturdy wheels of non-marking rubber make it easily portable, and lock out of the way while the machine is operating. A heavy duty axle prevents sagging or wheel spread.

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Like other MULTI-CLEAN Floor and Scrubbing Machines, the MC-31 is 100% ball-bearinged. Its compact gear unit is sealed and permanently lubricated at the factory.

Economical

With its saving in cleaning time, low upkeep, and other advantages, the MC-31 is the most economical choice for most buildings with hallways and large, unobstructed areas.

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SPECIFICATIONS

Motor	Extra heavy duty 115V or 230V G.E. capacitor
Hp Rating	1½
Brush Plate RPM	158
Number of Brushes	4
Diameter of Brushes	12"
Brush Covering Area	855 sq. in.
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Machine Weight, Pounds	156

MULTI-CLEAN Products, Inc., SMP-17-57
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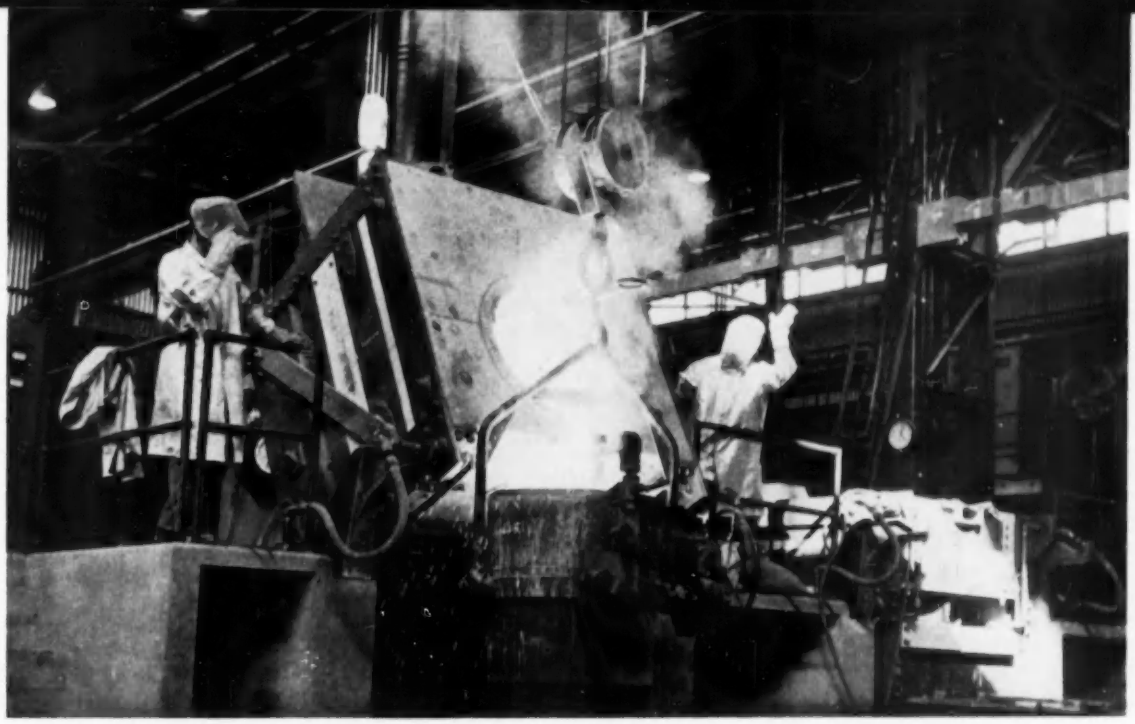


Fig. 1 Technicians are pouring a heat of special alloy. Clothing and melting floor give maximum protection.

planning for safety

ELIMINATE BOOBY-TRAPS

In planning or redesigning your plant, many elements must be considered from the standpoint of safety. The most important ones are:

1. **The Plant Site**
2. **Entrance and Exits**
3. **Aisles, Stairs, Elevators, Floors, Ramps and Obstructions**
4. **Equipment Arrangement and Guarding**
5. **Painting and Lighting**
6. **Fire and Explosion Prevention**
7. **First Aid Facilities**
8. **Flow of Material and Housekeeping**
9. **Material Handling and Storage**

by **R. W. MALLICK**
Staff Engineer
Westinghouse Electric Corp.
East Pittsburgh, Pa.

If you really want to have a safe plant, you must plan for it. Catchy slogans may alert your employees and make them safety conscious. Safety education results in a decrease in accidents. Safety first contests also have short term benefits. But for the long pull, you must have a safe plant if you want a good safety record.

In the case of industrial safety, there is no better foundation for accident prevention than pre-planning it into the plant layout. If your plant is properly planned and laid out, you will have a minimum number of accidents, all other things being equal.

Most plant executives now appreciate the economic value of a good plant safety record. At one time, not too many years ago, spending money for strictly safety measures was considered a luxury.

Thanks to modern statistics that thinking has changed. Today it is no longer necessary for planning engineers to temper their layouts to avoid the luxury of safety measures. **Accidents cost too much to allow safety to be treated lightly in plant layout design.**

Your layout will largely determine whether or not you are building potential "booby traps" into your plant.

Let's start with the plant site.

1. The Plant Site

You may not think that a plant location and site have much bearing on safety, but they do. Your employees must travel to and from work and your plant location may subject them to travel hazards.

Fig. 2 A safe design for plant entrance need not lack eye appeal, photo shows.

The usually heavy influx of traffic at shift change hours, the tendency to rush out of the plant, or beat the whistle getting in—are factors affecting safety. If your plant is on a busy highway or city street, proper plant approaches should be provided.

Perhaps your plant may be situated on a terrace requiring the use of stairs or ramps. These may be hazardous during inclement weather. One-way traffic lanes should be considered in the layout of the grounds. Proper shelters for employees using public conveyances are another consideration; also proper and adequate parking facilities. These are a few of the considerations the plant engineer should give to safety in the plant site and arrangement.

2. Entrance and Exits

A great deal of space could be devoted to the discussion of entrances and exits. Included in this category is the means of receiving and shipping, as well as provision for pedestrian traffic.

In some of the older plants very little thought was given to adequate receiving and shipping facilities or to segregating them from intra-plant traffic. The heavy congestion centered in these areas is a fertile field for accidents. Industrial architects have in recent years succeeded in creating structural designs that have proven to be very eye appealing yet functional in terms of traffic efficiency and safety.

The mass production potentials of most modern plants require that materials and personnel be able to

Fig. 3 Special floor and lighting in the assembly area contribute to safety.

move in and out of the plant quickly, safely and economically. Some safety features to think about when planning a new layout or when changing an old one are:

a. Wherever possible keep rail, highway truck, industrial truck and pedestrian traffic separated. (See Figure 2.) Where this cannot be done, plan the movement in such a manner as to avoid possibilities of collision.

b. Avoid sharp turns, grades, blind spots, intersections, cross-overs, congested points and similar "built in" hazard potentials.

c. It is better and safer to eliminate by good planning and design any potentially unsafe work conditions than to alleviate the hazard later on by some "protective means." To this end, the use of three-dimensional models is a worthwhile aid and will be discussed at greater length later.

d. Where the volume of traffic is heavy, receiving and shipping departments should be designed with depressed docks or elevating platforms to permit loading and unloading of carriers by mechanical means at floor level. Proper clearances between the sides of the vehicles and obstructions should be observed. Statutory codes in some instances are too liberal for good practice.

3. Aisles, Stairs, Elevators, Floors, Ramps and Obstructions

a. Aisles—Factory aisles, particularly the main traffic aisles, should be of generous width, as straight as possible and completely free of obstructions. Where possible, corners should be cut off on a diagonal and visibility should not be obscured. If vehicles must pass in the aisle, the latter should be at least twice the width of the widest part of the vehicle or load, plus another three feet if the aisle is also used by pedestrians.

If the traffic is not heavy, the aisle can be of a width equal to the maximum width of the vehicle or load plus two feet, provided passing zones are established at intervals of from 150 to 200 feet.

One-way traffic aisles are receiving increased attention in industry and should be encouraged. Look at what they did to help traffic conditions in our cities.

The aisle should be marked by lines of suitable color. Permanent markers such as metal disks are also suitable. The floor surface should be free of any deformations, and kept clean at all times.

The surface material should be suitable to the needs of the traffic loads transported. The aisles should be well lighted and, if not lighted at night by general lighting, should be illuminated by night lights for the benefit of service employees or off-shift workers. If the aisles are designed as emergency passways, they should be marked by regulation exit markers.

Since aisles are the main arteries for the movement of men and ma-

terials, they should not be looked upon as luxurious use of valuable floor space. They are as much a facility as any material-handling device in the plant and should be given at least the same consideration. As a final note, don't lay out your main traffic aisles in such a manner that persons or vehicles approaching the aisle from doorways or side aisles are exposed to possible collision. Keep doorways and approaches recessed and junction points free of obstruction to traffic view.

b. Stairs—Stairs are always a potential hazard. Someone once remarked that there has been no improvement in the design of stairways in 5000 years. This is perhaps sardonic for we do have electric stairways which have a remarkable safety record. However, the point is well taken, for the safety of stairways is a problem. Wherever possible it is best to eliminate them.

When this is not feasible, they should be designed for a maximum of safety. Some features to keep in mind are adequate width, hand rails on each side and one in the center if the stairs are wide. Risers should be of nominal dimension and treads sufficiently wide. A nonslip surface, particularly at the nose, is desirable. Landings should be spaced at generous intervals. If located outdoors, the stairs should be designed for quick and easy cleaning during inclement weather. Radiant heat can be considered in the design of concrete steps to keep them clear of snow and ice.

c. Elevators—Elevators have received much attention in recent years as they are still the mainstay in vertical transportation. But they are fertile areas for accidents if not properly planned for the tasks they are called upon to perform. While most states have strict elevator codes, this does not prevent their misuse.

When planning movements by elevator, it is extremely important that it not only have sufficient capacity to carry the gross load but also be structurally designed to accommodate unbalanced or pinpoint loads. For example, a 10,000 lb. elevator floor might collapse if the 10,000 lb. load is distributed over only four small wheels of a truck. The elevator should also be of suitable design and construction to operate smoothly and to level accurately at each loading and discharge point. Care must be exercised to avoid the possibility of load-shifting while the elevator is in operation.

Approaches must be free of obstructions at all times. Doors should be designed so as to require that they be closed while the elevator is in motion or improperly leveled at a landing.

d. Ramps—Ramps are very useful when slight differences in floor elevations must be negotiated by either pedestrians or vehicles. However, they should not exceed 10% in grade for good practice if used by industrial vehicles. They should have a good, hard surface and be kept clean and in good maintenance condition at all times. Hand rails at the sides are a good safeguard. Radiant heating on outdoor ramps is a good investment. Curbs should be provided if vehicular traffic is planned.

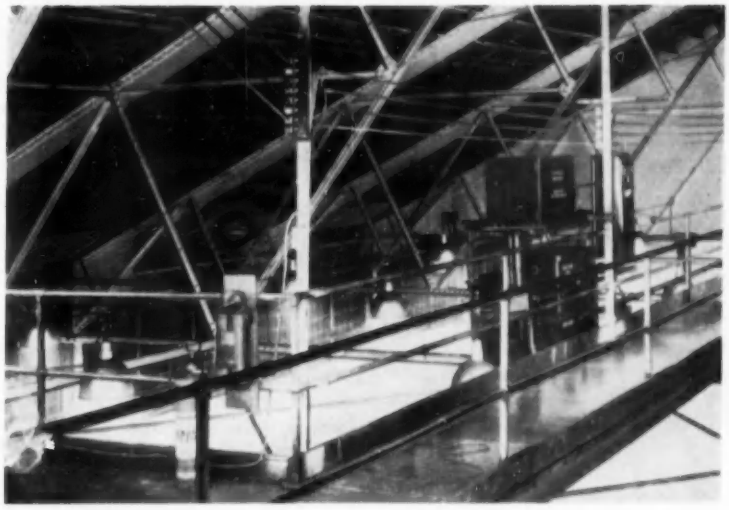


Fig. 4 Here the maintenance crew works high overhead in complete safety. The protected catwalks, handy extinguishers and good lighting are major factors.

e. Floors—One of the most controversial subjects in industrial plant design is factory floors. Here are some of the important features to consider.

Floors, particularly in multi-story constructions, should be of adequate structural strength. It costs very little more to increase the allowable load capacity when designing a new floor. In most plants the occupancy changes many times during the life of the building, so the extra safety factor is a good investment. The floor surface should suit the occupancy and traffic conditions. If this provision is observed, any sound structural material will provide a good floor. The problems arising with most floors stem from misapplication and abuse. (See Figure 3.)

Floors should be kept free of tripping hazards and be provided with proper drainage if subject to liquids. Where the floor above serves as the ceiling for the room below, thought should be given to protection from dust, dirt, leakage, spattering and similar hazards that might result from the occupancy above.

f. Obstructions—Every factory has its share of obstructions. Pipes,

"Safety belongs to those who plan for it"

conduits, drains, valves, fire apparatus, heaters, etc. are a necessary part of the plant structure, yet they are often a nuisance or even a hazard. It is very often not too difficult to locate these obstructions in inconspicuous places when the plant is being laid out. Also proper shrouding can eliminate much of the eyesore effect and hazard potential. In planning the layout, each space-occupying fixed object should be carefully provided for to make sure that there will be a minimum of interference with persons or materials. Head room is of particular importance.

4. Equipment Arrangement and Guarding

The arrangement of the equipment within the plant is probably the function which most persons look upon as the plant layout engineer's predominant field of operation. This is largely true, and it is also the one field in which he can plant the most "booby traps" or eliminate them.

It is a cardinal principle that the layout engineer should determine the exact requirements of each work station and then make adequate provision for each space-occupying item. This space factor may be fixed, as in the case of an item of equipment, or it may be a variable, such as service access, material clearance, temporary storage, or maintenance provision. It is the failure to provide the proper space factor that germinates accidents.

While the plant layout engineer cannot be held responsible for the failure of supervision or operators to utilize space as planned, he can anticipate changing conditions and provide for normal requirements. Since statistics show that about 40% of all industrial accidents are traceable to some source of plant layout or material-handling defect, it is a very fertile field for safety development. Proper work station layout will do much to reduce these accidents. Here are a few points worth remembering.

a. Always allow enough space for efficient operation and safety. But do not allow too much space, as this is wasteful and leads to poor housekeeping and ultimate hazards.

b. Be sure to lay out the complete work station instead of only the major item of equipment.

c. In planning the work station, be sure to provide for all necessary handling and storage equipment so that the operator can work safely as well as efficiently.

d. While most machine tools are provided with safety guards by the manufacturer, the special application by the user, the addition of auxiliaries, the requirements of installation may create the need for additional guarding. Be sure your work station layout provides for it.

e. Always have the safety engineer approve the layout before installation is started.

5. Painting and Lighting

In the past ten years we have learned much about the value of color dynamics and compatibility of painting and lighting. Since you must light and paint your plant, why not do it right and reap dividends on your investment?

While we may not realize it, the average operator's eyes work just about as strenuously as his hands in the course of a day's work. In yesteryears we took cognizance of abuse to hands and backs and provided mechanical aids to aid and protect them. We protect eyes too from mechanical injury but we have done far too little to relieve them from physiological injury—more commonly known as "eye strain."

The greatest aid to combat this eyesight fatigue is correct light and color. Your plant "see-ability" problem, of course, requires local study but the rewards are well worth the efforts. With proper lighting facilities, accidents will be reduced, productivity will rise and the work force will be generally more content, for eyestrain is a source of many ills and much fatigue. A tired worker is a careless worker. In planning the layout of your plant, therefore, give thought to:

a. The level of illumination required at the work station for good "see-ability."

b. The quality of light as well as its quantity.

c. The color scheme of the building and equipment surfaces in the area of the work station. They should provide the following effects:

1. Good lighting reflectivity without brightness or glare.

2. Contrast to make objects easily distinguishable.

3. Pleasantness of surroundings.

6. Fire and Explosion Prevention

While most states have codes which require industrial plants to take precautions against fire and explosion hazards, the letter rather than the spirit of the law prevails. The plant layout engineer should be familiar with all the materials and processes used in the plant operations. Only in this way can he be sure that adequate precautions are being designed into the layout.

Exposure or hazard potential is always a relative thing in industrial plants depending on the precautionary measures taken. Some of the most destructive materials which we possess are being handled daily in comparative safety because proper measures have been taken to prevent accidents.

Fire and explosion are potential hazards in nearly every industrial plant. When the plant buildings are first built, the architect or engineer will have provided reasonable safety features, applying to the known occupancy at the time. But plants are seldom static in utilization and as occupancy changes, the plant layout engineer should see that the necessary changes are made in safety provisions to insure fire and explosion protection. Some of the things the plant layout engineer should constantly keep in mind are:

a. Should sprinklers be provided to protect the building or contents or both?

(Continued on page 42)

Phones Guard Mine Safety

Chief phones traffic orders. Devices trace electric locomotive movements.

As man at left checks the daily supply record, his partner talks to control room before moving out with "Jeep," which hauls supplies, carries visitors.

Traffic control, difficult even under ordinary surface circumstances, can become a major "headache" in a deep ore mine. But the Sullivan Mine of The Consolidated Mining and Smelting Company of Canada, Limited, world's largest lead-zinc-silver ore producer, has placed emphasis on the "control" in traffic control by establishment of a communications center.

In this "brain" of the Sullivan Mine, which is at Kimberly in the southeastern section of British Columbia, a complete two-way communications system has been established at the main level. Six electric locomotives which operate in a 10-mile underground area are equipped with radio-telephone communication equipment.

Amid an array of electrical equipment, the traffic control man keeps a watchful eye on all locomotive movements in the mine. Before installation of the two-way system, traffic control depended on a block signal system and regular telephones.

Now, operators of moving locomotives can talk directly to traffic control. Since the system is a "party line," other motormen and supervisory personnel receive the message simultaneously, which increases efficiency and has safety value. This improvement was welcomed by the mine's 1,000 employees.

News of emergencies can be instantly relayed to persons concerned. If an underground ambulance is needed, tracks can be cleared in seconds.

Simply by picking up a "mike" an operator can make requests for supplies and transportation. This facilitates unscheduled pickups and deliveries.

The system is powered by the 250-volt direct current which runs the locomotives. The sets, which are completely insulated, employ a frequency-modulated FM carrier of 88 kilocycles, which does not interfere with the mine's conventional telephone system.

Sullivan Mine employees say the communications system is one of the great improvements in operating equipment since the mine was discovered in 1892. It is a continuation of the modernization program inaugerated by "Cominco" which took over the property in 1909. (Approximately 70 million tons of ore have been extracted since the mine was acquired by Cominco.)

"This improvement can be classified with the steps forward from hand-driven drills to pneumatic ones, from muck sticks to mucking machines, and from hand tramming to electric locomotives," one veteran employee stated.

Using the new system, workmen can flash word of breakdowns, faulty track conditions, derailments or accidents to parties concerned

(Continued on page 30)

The WHY, HOW and of Eye Protection

EYE PROTECTION SERIES
other articles June and July

Expected Results From an Eye Protection Program

Let us assume that we are starting from the beginning and that no program of eye protection has yet been used and the company in question is an average one. In such a case we can plan on the following specific results.

1. **Losses of one or both eyes in this plant can practically be eliminated.**
2. **First aid eye injuries can be cut to less than 8% of previous frequency.**
3. **Serious lost time eye accidents can be cut to 1% of previous frequency.**
4. **Productivity of employees will be improved.**
5. **Damaged fingers, toes, limbs, body and head with attendant lost time will be reduced through better seeing.**
6. **Damage to expensive equipment will be reduced.**
7. **Employee satisfaction with jobs will be improved.**
8. **A greatly increased awareness of overall safety practices will be evident. Personal attention given to each individual through this *better vision-eye protection* program will be effective in instilling better participation of most if not all employees in all safety matters.**
9. **Insurance costs can be reduced.**

by **REUEL A. SHERMAN**
Director, Occupational Vision
Bausch & Lomb Optical Co.
Rochester, New York

An Eye Protection Program can be one of the most rewarding personnel steps which can be taken by the management of an industrial company. Well documented evidence from many companies convinces us that well planned and efficiently administered activities of Better Vision and Protected Eyes have brought economic rewards and other beneficial results to all parties concerned.[1, 2] Often these results have been realized in areas where they were not anticipated. For example, good eye protection programs have been planned with the sole objective of protecting eyes against injury. Not only was this one objective reached but in addition tangible results have been found in reduced frequency of injuries to hands, feet, limbs and bodies of employees and in reduced damage to expensive equipment. Results also have been found in greater productivity of employees, less scrap and improved satisfaction of employees with their jobs.

We have long recognized the assumption that seeing is related to freedom from accidents. During the last dozen years factual evidence which has been gathered makes it possible for us to state categorically that **how** we see and **what** we see are of basic importance in staying out of accident producing situations.[3]

On the basis of abundant factual evidence and testimony of authorities in the field, we can state that

COST

whatever is placed in front of our eyes that enhances our seeing will also improve the odds of our being free from accidents. Conversely, whatever we place in front of our eyes that detracts from or restricts our seeing will lessen the odds of our being free from accidents.[4]

We are born with certain patterns of finger dexterity, of reasoning capacity and certain patterns of height and weight. Little can be done to improve such characteristics. Seeing is different. It can be improved readily in a high percentage of cases. A hard hat can be worn to protect the head and brain from injury. The wearing of such protection does not improve the reasoning faculties of the individual. Neither does the wearing of safety shoes or of safety gloves improve the skill or dexterity of hands and feet. On the other hand, heat treated safety lenses incorporating personal prescriptions can enhance an individual's seeing skill and at the same time protect his eyes from injury. **This double service of protected eyes and improved vision is unique. In no other area of human performance can so much be accomplished so quickly and so easily.**

When the history of the development of the eye protection movement is written we will be better able to evaluate the indiscriminate placing of safety devices in front of the eyes without due regard to the effect such protection has had on the individual's seeing ability. Without a doubt eyes were protected from injury but we wonder how many hands, arms and legs may have been injured as a result of impaired seeing. We repeat that

Basic Ingredients of an Eye Program

Some of the basic ingredients of a successful eye protection program are:

1. **Indoctrination of workers and supervisors in the idea of better vision and protected eyes. Posters, contests, brochures and other items are helpful but by themselves they are only partially effective. Meetings with safety committees, foremen, labor representatives and others concerned can get excellent results. Subjects for discussion at such meetings may well be:**
   - **a. Demonstrations of safety lenses showing impact resistance, etc.**
   - **b. Necessity of fitting frames for comfortable and efficient use.**
   - **c. The story of binocular vision showing how we see and the relationship of good vision to efficient work.**
   - **d. Demonstration of a vision testing procedure. This demonstration should include description of test slides and purposes of the tests.**
   - **e. Demonstration of various types of frames.**
   - **f. Discussions of policy for the use of protective equipment.**

(Continued next page)

2. **A procedure for identifying individuals who can profit from professional eye attention. What we *don't* see *can* hurt. We cannot realize how much money can be lost through inadequate vision of employees until we have tested these employees' eyesight. A vision testing instrument can be used for taking an inventory of the seeing skills of employees. Such testing can be done quickly and accurately. It can be done one department at a time or on whatever basis the eye protection program is introduced. Such testing should be done periodically. All new employees should be tested. In this way a continuing activity of "better vision and protected eyes" can be maintained. Those employees who do not meet desirable standards for their jobs can be referred for professional eye attention. Their vision can be brought up to standard in over 90% of cases.**

3. **A dispensing and maintenance program is basic. No individual employee can do his best work while wearing a pair of glasses which hurt his ears or his nose, or which slide down loosely on his nose when he moves his head. The size of the lenses and the frames should be in conformity with the individual's facial characteristics.**

4. **Cooperation from professional eye men in the community or the services of a professional consultant is basic. Prescriptions for safety lenses should be written *for the job* with judicious and effective use of multifocal lenses. Such multifocal lenses can be very helpful particularly with older, highly skilled employees. Special lenses for special jobs is an area which is just beginning to get the attention it deserves. A professional consultant who knows the seeing problems of each department can expand the benefits which can be achieved from a *"better vision-eye protection" program.***

anything placed in front of an individual's eyes that detracts from his seeing ability will tend to effect adversely his safety record, his productiveness and his general well being.

Elsewhere on these pages are indicated the expected results from a carefully planned and well administered eye protection program. The nine principal results listed will be realized only in proportion to the comprehensive use we make of the basic ingredients which are required for the most successful operation of the plan. The basic ingredients of an eye protection program are shown at the left and on the preceding page.

Selecting the Protection

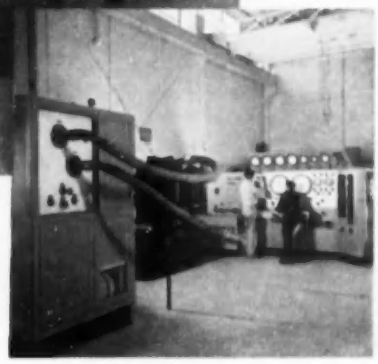
The selection of frames and lenses and the specific uses of side shields, tinted lenses, cover-alls and other products should be given careful attention. Experience indicates that compromises are sometimes desirable with matters such as side shields and other items which might provide complete protection but at the sacrifice of individual efficiency. Safety publications carry examples of types of protection for various families of jobs. Two additional sources of pertinent information:

1. Hedwig S. Kuhn in "Eyes and Industry" (second edition) [5] which illustrates and describes many practical and usable suggestions gathered from first hand experiences.

2. Joseph Tiffin in "Industrial Psychology" (third edition) [6] which covers the subject of vision and its relationship to accidents, productivity and other measures of employees' success on the job. The factual material contained in this book can be good supporting evidence for showing the effectiveness of a better vision-eye protection program.

Differences in plants, jobs, communities and personnel make it necessary to cut the cloth and fit it to each company's needs. In fairness to all parties concerned it would be impossible to give a list of rules covering the definite protective items which are most desirable for specific jobs. The sources of information we have listed will provide good suggestions. There can be no one best way to organize and ad-

For a copy of booklet described on opposite page, use Key # D-12 on card on page 73.



Pittsburgh COLOR DYNAMICS®

aids efficiency in making quality control test equipment

George L. Nankervis Company uses modern system of painting to reduce eye fatigue, and improve morale of workers

PRACTICAL, everyday experience is demonstrating to executives of the George L. Nankervis Company, of Detroit, Michigan, how Pittsburgh COLOR DYNAMICS in their new and vastly enlarged plant, benefits management and workers alike. The bright, cheerful work areas resulting from this system of painting have increased efficiency, improved morale and reduced accident hazards.

The Nankervis Company designs and builds special quality control equipment for the automotive and aircraft industries. Among its products are devices for testing engines, carburetors, fuel metering equipment, steering and braking mechanisms, shock absorbers, transmissions and differentials. It also engineers and installs electro-plating and metal finishing systems.

• **Using the principles** of COLOR DYNAMICS, colors were selected for interior walls and ceilings to improve seeing conditions. Stationary as well as moving parts of machines were painted in colors that relieve eye strain and lessen nervous tension and physical fatigue. Safety colors in hazard areas safeguard workers.

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IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

Fig. 1 Frame has yr. service expectancy.

Fig. 2 Metal, butyrate used in this type.

minister a **better vision-eye protection** program. The field engineers of insurance carriers and those of reputable supply houses can be very helpful in furnishing valuable information.

Information gathered from widely separated but representative sources, including large and small companies in many types of industries, permit us to make a few general statements concerning costs of protective eyewear. The average price may be less in some cases and may be more in others but the general average probably will be changed but little.

We can estimate that the average cost of all protective glasses including both prescription and plano lenses will be approximately $5.00 per pair. This, of course, does not include a professional eye examination or fitting fees. It includes only the cost of the eyewear. Administrative and accessory costs of course will vary much more than the cost of the eyewear. They may average as high as $4.50 per pair for glasses. Professional fees for prescription eyewear more often than not are the responsibility of the individual employee. The managements of many companies believe that it is desirable for the individual employee to arrange for his own professional services with the doctor of his own choice.

Maintenance costs of protective eyewear will vary depending upon the types of jobs on which the eyewear is used, by the care given the glasses by each employee, and by the quality of the eyewear which is purchased. It is estimated that the average life of regular acetate frames such as the one illustrated in Fig. 1 will be one year. On the other hand, a premium frame such as in Figure 2 is expected to be three years. A pair of prescription lenses should last as long as the desirable interim between recommended examinations by the eye doctor. The life of lenses can be estimated at 2½ to 3 years. Some types of work which expose lenses to particles of abrasive materials will shorten their life. The average maintenance cost may be roughly estimated at $1.60 per pair per year for lenses and frames.

The costs are relatively small compared to the direct and positive results which can be anticipated from a well organized efficiently run protective eyewear program.

The safety director of one of our leading blue chip companies has said that no program in all of his safety work has taken as much time, skill and energy to get started as has his **vision-eye** program. However, he said in spite of the time and effort required no other part of his safety work has been as rewarding from the point of view of reduction of accidents, getting cooperation from employees, supervision and management and in expressions of gratitude from individuals who have been helped personally from better vision and who previously were unaware of their need of eye care. The effort spent on the eye protection program has brought results which have been reflected in many phases of the company's activities. Costs have been lowered. The rewards have been many. The incorporation of the four basic concepts which we have listed will greatly ease the job of initiating and maintaining the program.

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From an address presented at the 1956 Genesee Valley Safety Conference. Pictures by courtesy of Bausch & Lomb Optical Co.

Sight Saved

Anthony Foegen, rural route, Dakota, Minnesota, is the first member of The Trane Company to become enrolled in the nationwide Wise Owl Club of America. Executive vice president Thomas Hancock presented Foegen with an official lifetime enrollment certificate, a lapel pin and shop badge, all designating club membership.

Foegen, a Trane employee for eleven years, qualified for club membership by wearing authorized eye protection equipment at the time of an on-the-job accident, resulting in the saving of his vision.

At that time, a control cylinder in the handle of a power wrench he was using to tighten bolts on a compressor suddenly worked loose, and, propelled by 90 pounds of air pressure, shattered the right lens of his safety glasses. Although the lens was shattered, it turned the flight of the metal plug and it landed about 25 feet away.

Membership of the Wise Owl Club is made up exclusively of industrial employees who, like Foegen, have saved one or both eyes by wearing safety equipment.

A non-profit organization sponsored by the National Society for the Prevention of Blindness, the Wise Owl plan is now in use by industries.

In presenting the awards, Hancock said, "It is important that industrial employees follow the safety practices ascribed for them while on the job.

"Industry is doing much to make the worker safe on the job, but unless he cooperates—and uses the safety equipment available—all the efforts may prove worthless."

Anthony Foegen receives Wise Owl pin from Thomas Hancock. Looking on is safety manager Earl Mahnke.

Drill press freed of filings by wiper.

FROM RAGS TO SAFETY

by **WALTER DOOLEY**
Plant Superintendent
Crane Packing Company
Morton Grove, Illinois

Every plant superintendent likes to get an inside tip by means of which he can increase efficiency and cut production costs.

Sometimes we pass these tips along to others who hold down similar jobs. Sometimes we keep silent. That's not because we don't want to share our experiences. Usually it's because there are too few opportunities to do so.

At the Crane Packing Company, where we manufacture lapping machines, packings and mechanical seals, we are in a position to let others know how, by solving an industrial wiping problem, we've been able to improve product quality, boost housekeeping efficiency, and cut material costs by nearly 39 percent.

Here's how it happened: A little over a year ago we were using nothing but rags for all industrial wiping done in our plant. That practice was not only costly, it also involved considerable time and effort in collection and counting prior to sending the wipers to the laundry. Furthermore, the bulky rags often presented a storage problem and our laundry bills were getting out of hand.

We soon realized some other material had to be found that would

Wiper used for cleaning turret lathe.

Paper wiper used on polishing machine.

New lint-free paper does a better job.

Sanitary qualities of paper widen use.

Clean Up

- of Chips
- of Product
- for Quality
- of Machines
- of Personnel

be less expensive, lint-free, uniform, more sanitary, and able to improve housekeeping. Such a product was suggested by Scott Paper Company, who, after many years of extensive research, had developed a new type of industrial paper wiper said to fill our needs. Even at first glance, we were impressed by the possibilities these new wipers appeared to offer. They appeared to be clean, strong, safe, and uniform. It was also claimed that they had the additional advantages of being highly absorbent, versatile, always handy, and easily disposable.

In so far as management was concerned, we could easily see how these new paper wipers, should they prove successful, would permit a new approach to such problems as high unit cost, expensive handling, erratic performance, shrinkage, pilferage, and laundry loss frequently in evidence when other wiping methods are used.

We knew, at that time, that the average worker in our plant was more than satisfied with the rags that were being made available to him. At the same time, however, we could see that it was possible for these new industrial paper wipers to give us better health protection and to help us reduce the employee accident rate. If a clean paper wiper were to be used, for example, there would be no danger of its containing steel shavings, filings, or chips from a previous job that could result in cut flesh. There would also be no buttons or foreign matter to scar delicate surfaces, and no rough spots or gaping holes.

Statistics also indicated that wiping of hands constituted better than 60 percent of all the wiping done in any industrial plant. If we were to switch over to paper wipers, each wiper taken from the box would be fresh and clean and ideal not only for hands but also for the wiping of a worker's face or glasses.

Additional Requirements

There were, however, two big questions in our minds. Would these paper wipers do the job as efficiently, and as economically, as rags? If we put them in use in our plant, what would be the reaction of the employees? There was only one way to find out. Put them to the test.

It was in our Lapping Department, where lint-free wipers are an absolute necessity, that our old wiping habits were giving us the most trouble. So this was the natural spot to choose for a 90-day paper wiper test.

Arne Moritzen, Lapping Department foreman, was given the responsibility of establishing a close control and cost record. He also was to keep a close check on inventory and personal acceptance. A detailed report was to be made at the end of each month of the testing period.

Employee Accceptance

At the end of the first month, we found that 85 percent of our employees still preferred rags to the paper wipers. There were major complaints but, on close examination, most of these complaints were due to the fact that the workers had always used nothing else but rags. And, during this test period, we had completely withdrawn rags and had substituted paper wipers exclusively.

The experiment continued and, by the end of the second month, the number of employees preferring rags had dropped to 78 percent. By the end of the third month, it was down to 55 percent. It should be pointed out that these surveys of wiping preferences were not conducted by the Lapping Department foreman. They were especially conducted by one of the operators in order to avoid any pressure of any kind.

During this three month trial period, other important developments were being recorded. Our wiping costs, for example, had been reduced by 38.8 percent. We had been buying the paper wipers in small quantities for the test and we knew, once we began purchasing them in larger quantities, our wiping costs could be lowered by as much as 42.5 percent.

By the end of the 90-day trial period, foreman Moritzen further reported a very definite improvement in housekeeping. Each employee had a box of paper wipers right beside him, plus a disposal container which was emptied twice daily. The possibility of a fire hazard was also reduced since no longer were there any boxes of oily rags lying around the Lapping Department.

Although we knew it would never be practical to do away with rags completely in all departments, the paper wiper test in the Lapping Department has proved an outstanding success and the paper wipers were soon in use in several other areas.

Each perf-embossed wiper consists of two sheets which are treated by a special process to provide extra durability, greater cleaning action and maximum dirt retention. Chemical treatment also imparts all-important wet strength.

Our testing period having proven successful, my enthusiasm for paper wipers continues to grow. They've saved us money while doing the job better. And only recently, when we conducted another confidential survey, we found that three out of four of our employees have completely changed their own opinions. Paper wipers are now their personal choice.

Pictures by courtesy of Scott Paper Co.

SITUATION WANTED

Safety Director or Safety Engineer available. Fifteen years' experience in safety, medical and compensation. Multiple plant operation. Member Executive Committee, National Safety Council, Electrical Equipment Section. Send replies: Box 53, c/o SAFETY MAINTENANCE, 75 Fulton St., New York 38, N. Y.

Standardization Seminar

Dr. John Gaillard will hold his next five-day seminar on industrial standardization from June 24 through 28, 1957, in the Engineering Societies Building, New York City. The seminar is intended primarily to assist company management in the organization of standardization work and the training of staff in the art of writing specifications.

For further information and registration, write to Dr. John Gaillard, Box 273, Route 1, Briarcliff Manor, New York.

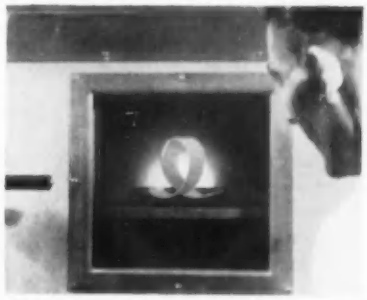
Wearing Silvabestos gloves, workman safely removes heated bricks from furnace port.

Safety garments of new R/M Silvabestos® cloths weigh less, last longer, reduce employee fatigue

With R/M's revolutionary new Silvabestos coated cloths, manufacturers can make safety garments that are lighter, yet still provide superior protection. Such clothing is more comfortable and less fatiguing to wear. And it far outlasts the kind using uncoated cloths of comparable weight—*up to 3 times longer!*

The reason is that after being subjected to high temperatures for prolonged periods, ordinary uncoated asbestos cloths tend to lose their tensile strength. The Muffle Furnace Test—a standard industry procedure for checking the qualities of materials for use in safety garments—has shown that Silvabestos coated asbestos cloths have 27 to 56% greater retained tensile strength than similar uncoated cloths. The Wyzenbeck Wear Tester has shown that it has 39 to 249% greater resistance to frictional wear than ordinary cloths. And the Abradoflex Test Machine, which simulates normal wear conditions, discloses a wear improvement factor 27 to 297% higher than that of other fabrics. (Note: Since Silvabestos has only moderate reflectivity, it should not be used in contact with open flame. It is not a substitute for mirror-bright aluminum-finished asbestos cloth.)

Raybestos-Manhattan originated the aluminum-resin coating process which makes possible the superior characteristics of Silvabestos. Complete Wyzenbeck, Abradoflex, and heat resistance test data will be furnished on request.



Muffle Furnace Test. In this test—standard throughout industry for checking the qualities of safety garment materials—R/M Silvabestos coated asbestos cloth was checked against ordinary asbestos fabrics. Comparisons were made between original and retained tensile strengths to show the amount of heat degradation. Silvabestos showed 27 to 56% greater retained tensile strength.

Raybestos-Manhattan does not make safety garments—only the cloth for fabricating them. Send for list of leading manufacturers making safety clothing from genuine R/M Silvabestos.

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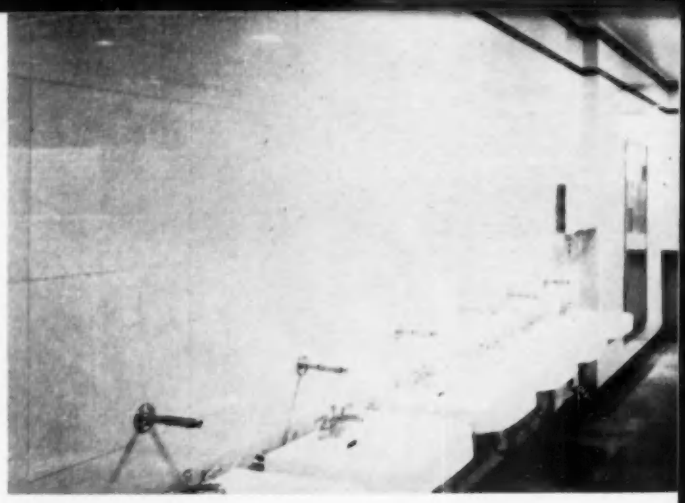
(For details, use Key # D-13 on card on page 73)

BUILDING MAINTENANCE SERIES
other articles April and June



by **RALPH W. WOIDA**
Building Maintenance
Superintendent
Allis-Chalmers Manufacturing Co.
Milwaukee, Wisconsin

Window maintenance, especially window cleaning, is a never ending chore and with the current methods and labor costs it can become an expensive luxury. Therefore, we would advise a practical analytical approach in determining a window cleaning program. A development of the necessary facts is warranted if economical scheduling is to be met. Some facts to gather before drawing up any realistic conclusion would be:

a: What are function of the windows—for light or ventilation?

b: Were they installed primarily for budget reasons at the time of building erection?

c: Is the artificial lighting adequate without full benefit of the window light?

d: How often are windows cleaned currently?

e: Can frequency be reduced without added artificial lighting expense?

A realistic approach with consideration for the building occupants in the various areas will lead to a schedule that is not arbitrary but factual and where desirable will be complementary to the building structure.

Once proper scheduling is accomplished, Department Managers or Area Superintendents can cooperate in maintaining these schedules by preparing stock removal for accessibility when scaffolding or staging is involved.

In the recording of the activities, it is advisable to prepare annually a listing of the areas by the intended frequency weekly, monthly, quarterly, etc. and determine beforehand target dates on which the service is to be performed. In this manner, budget control and help requirements become a reality.

Washroom Maintenance

To many uniformed people the prime function of a Sanitation Department is the maintenance of washrooms when actually it performs many services. But the maintenance of sanitary washroom conditions is one of its most important functions. Although clean restrooms are of vital importance in retaining continued good health of the employees and public, it should also be performed to prolong the life of the facilities.

Public Health Codes endeavor to establish standards for the good of humanity; however, it should be a part of the program that these standards not only help the public, but are maintained at a minimum cost.

Daily service is mandatory in a planned program and must include the cleaning of all fixtures and floors. Since this chore is repetitive and certainly not the most agreeable occupation, service help without proper supervision and without recognition can become negligent in their duties and take short cuts. These short cuts eventually will have not only a detrimental effect on the cleanliness, but will subsequently cause facility failures.

Each factor in proper daily servicing should be considered separately. They are:

1: Tooling
2: Supplies
3: Personnel

Although the design of the facility before construction certainly is a factor that should be thoroughly considered for eventual subsequent care and service expense, this factor many times is overlooked because of a limited building budget. But later events prove that original economies lead to greater subsequent expenses. For instance, proper location and type of fixtures in the facility will offer economies in the time it takes to clean, and amount of cleaning to be done, because of accessibility to the fixture and fixture surfaces. The same applies to the floors. Many floor obstructions will tend to prolong service time and will even promote soil build-ups adjacent to the obstructions, as service help is reluctant to take the time for proper care or do not have time because of tight schedules.

Since the design is not easily changed once installation has taken place, let us deal with other factors previously mentioned:—

Tooling and Supplies: The products on the market today for this type of service work are many. They can be used to good advantage or to a disadvantage if definite procedures and restrictions are not provided. As an example, some floor cleaners, highly alkaline or acid besides being the cause for potential industrial accident cases,

What's Behind Spick and Span Washrooms and Windows

can accelerate floor deterioration. First use with such a cleaner does a beautiful cleaning job, almost to the extent of bleaching, but continued use affects the bonding material in ground chip or magnesite floors and will eventually leave the chips or aggregate to stand out, leaving depressions where the bonding material was originally. The condition is not only hard to maintain, but causes undue wear on mops, extra effort on the part of the service personnel and creates a potential bacteria-breeding ground. Then too, untried and untested chemicals for use in the dispersion of the uric acid salts can be a highly potent destroyer of fixtures and facilities.

Many chemicals will definitely cleanse a building of uric acid salts leaving the room a healthy and odorless area, but their effectiveness on other parts of the facility, like the sewer and plumbing, is an extreme disadvantage and can cause untold replacement costs. It is our belief that proper cleaning, ventilation, and scheduled use of approved chemicals is sufficient for proper toiletroom maintenance. Before any trial is made with products for these purposes, the Safety Service Dept. should properly evaluate their content even to the extent of prescribed immersion tests. Certainly, with the progress in all industry, it must be admitted that to be skeptical of an unfamiliar product or product name is only reasonable, but to be unfairly biased is not progressive. Therefore, in dealing with innumerable sales representatives, we find that to be firm and fair, courteous and receptive, is beneficial both from the standpoint of product and method improvement.

Personnel: The last factor in service work is the all-important one, and that factor is the personnel. We will consider both supervision and their help as the "personnel." The fact that this type of occupation does not require the greatest technical or educational background does not mean the individuals are robots without feelings or ambition. Recognizing this fact and analyzing the effort and exposure conditions which this group is confronted with, we can begin to build this organization into a team by personal contact and exchange of ideas. This all important factor of personnel is a condition that affects many industrial organizations. Labor contracts include what is termed a labor pool and in this pool are those occupations that are not generally considered under the skilled trade groups and this pool supplies the requirements of the Sanitation Department.

Contingent upon business trends the employees in this pool are transferred to higher or lower wage groups. If business is good and the employee's potential qualifications proper, and length of service adequate, he is entitled to and given consideration for higher wage group occupations other than Janitor; conversely, if business conditions decline, the situation is reversed.

These instances then make for an unstable personnel complement in the department; however, if the proper organizational approach is determined, this no longer is a major

problem. To make operating under this situation economical and methodical, we find that specialization in work assignments offers greater control than assignments including a variety of duties, although specialization may become boring to the personnel because of the seeming futility of the repetition.

There are other advantages too, namely, that responsibilty for performance can be made individually; that training and instructing are more easily adopted, supervisory follow-up is accomplished more easily, and that employees with known physical limitations or impairments can be placed more compatibly for mutual advantage.

In our organization, because of the magnitude of the operations we have established assignments such as **Shop Cleanings** (brush and broom work only in shop production areas); **Washroom Cleaning,** (service and cleaning washrooms only); **Office Cleaning,** (removal of waste paper, dusting and damp wiping of office furniture and dust mopping of floors); **Floor and Furniture Cleaning,** (mopping and re-preservation of floors, washing and waxing of furniture and washing partitions); and **Pit and Machine Cleaning,** (cleaning erection pits, machine pits, and machine cutting-lubricant reservoirs). Since this set-up affords flexibility it can readily be manipulated to offer proper service depending upon business conditions and does offer economical control based on realistic necessity and not on arbitrary views.

In establishing assignments, trials must be made to determine fair work output and this is based on the type of area, area conditions, and required quality standards. Certainly, the individual must be considered, too, such as average age factor, physical limitations, male or female, effort involved, and hazards of the assignment.

This question of how it will be done is a determining factor as to what amount of area can be serviced by an individual and will therefore resolve the assignment. In this work we find that the tools of the trade are still the brush, the broom, and the mop. Unfortunately, the developing of new tools is slow, especially so in this field, as compared with other areas of mechanization. For instance, we find that time and motion studies are being made on large machine tools to ascertain travel distance of the operator from one control to another and that reaching distances are being analyzed to eliminate operator fatigue and down-time of the machine.

Machine tool designers, too, are including centrally located control levers to eliminate the need for cranking, pushing, stooping and bending when operating the machines.

In the field of Sanitation, however, we are only beginning the study of fatigue factors. Once this program is under way we can adopt method changes to accomplish the work in a more efficient manner.

As an instance, we now find our own supervisors studying the operation of wringing out a wet mop. We know that over 30 lb. of body pressure must be applied to a conventional squeeze type wringer in order to remove sufficient moisture from the mop to dry the wet floors when doing floor work. With modification the wringer and the use of a hydraulic ram can decrease to a great extent the effort involved.

We believe that the approach of breaking down in detail each operation will eventually lead to new and better methods.

In conclusion, we would suggest that continued serious study regarding the developing of new and better methods in the field of Industrial Sanitation will result in greater economy, better health, and safer working conditions.

From an address presented at the 8th Plant Maintenance and Engineering Conference and Show.

Pictures—Left: Pittsburgh Plate Glass Co.; Right: Huntington Laboratories, Inc.

Mine Phones

(from page 19)

Delays which might lengthen a tie-up are prevented.

Designed to withstand a great deal of abuse, the mine-phone equipment is mounted on each locomotive in a shock-resistant cradle in a dust tight splashproof metal case. The weatherproof loudspeaker and microphone can be mounted at any place convenient to the motorman.

Normally, the unit is in receiving position for a call. When making a call, the operator presses a button on the side of the "mike" opening his transmitter unit and disconnecting his receiver.

Men of the Sullivan Mine consider good communications invaluable in maintaining the mine's production level of 11,000 tons per operating day. The communication system is a top time-and-trouble saver which has made their job safer, easier, faster, and more economical.

Pictures by courtesy of Mine Safety Appliances Co.

Drilling Industry Safety Clinic

The 12th Annual Drilling Industry Safety Clinic, sponsored by the American Association of Oilwell Drilling Contractors, will be held Friday and Saturday, May 24–25, at the Baker Hotel in Dallas.

Exhibits of the latest developments in safety equipment will be displayed on the mezzanine floor of the Baker Hotel during the clinic. Luncheons and a fellowship hour Friday evening are planned for the entertainment of the delegates. The AAODC Annual Clinic, the major safety meeting of the drilling industry, attracts safety supervisors and management representatives from all points in the U. S. oil country. The drilling association also conducts local area and regional safety clinics in all parts of the country for field personnel, and participates in other meetings, such as the Annual Texas Safety Association Conference.

The SAF-I® All-Plastic Family

modern, lightweight, comfortable eye protection

for every hazard

One-piece molded lens and brow bar for maximum impact protection, feather-light comfort. Available with side shields.
Series 24 SAF-I-SPEC®

IMPACTS .. DUST .. GLARE .. CHEMICALS .. each of these USSSCO eyeshields is designed for a specific combination of hazards. Year by year, the low initial cost, ease and economy of lens replacement have resulted in increasing popularity and widespread use . . . today, many plants use all-plastic safety eyewear exclusively.

All models shown can be worn as cover goggles over personal glasses . . . and can be fitted with either clear or green lenses.

Bright, attractive bronze or slate blue frames, new modern styling. Weighs less than 1 oz. Available with side shields.
Series 25 SAF-I-SPEC®

Guaranteed non-fogging. Soft, tough vinyl frame, generous metal screen for maximum ventilation.
Series 29 AIRFLOW SAF-I-FLEX®

For the thrifty buyer . . . highest quality, lowest cost safety eyewear of its type today.
Series 29 "Thrifty" SAF-I-FLEX®

A non-fogging chemical goggle! Twice the ventilation . . . patented baffles keep out liquid splashes. Weighs only 3 oz.
Series 29 AIRFLOW SAF-I-CHEM®

The standard plastic chemical goggle. Lightweight, comfortable.
Series 28 SAF-I-CHEM®

The standard all-purpose eyeshield. Genuinely comfortable, lightweight.
Series 28 SAF-I-FLEX®

Pioneers in Modern Industrial Eye Wear

All Models shown meet Federal specifications for optical qualities, impact and piercing resistance. Write for catalog of complete USSSCO line.

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There's a trained, full-time USSSCO Safety Service Engineer within a few minutes, or at most a few hours from you. Consult your Phone Book Yellow Pages, or write us in Kansas City.

The original all-purpose cover goggle with optically correct plastic lens . . . and still the leader! **Series 22 1-piece SAF-I-SHIELD®**

(For details, use Key # D-14 on card on page 73)

A SAFETY IDEA

Wire Rope Supports Pile Clusters

Wire rope can be likened to any other precision tool. Used correctly, treated right, given proper care and attention, wire rope becomes a useful servant that will yield longer service life, safer operation and economy. This was brought out recently when wire rope assemblies were called upon to perform an unusual service requirement.

Detroit Edison's new coal unloading dock was ready for operation when, through careful experimentation, it was deemed advisable to further strengthen the dock's wooden pile clusters, and thus increase the docks strength to resist extra heavy demands on its load-carry ability.

Management, in consultation with engineers of the utility, the dock builder and wire rope specialists, decided to support these clusters with preformed wire rope equipped with locked-wire rope endings.

The dock runs approximately 1,500 feet along the Rouge River. Two concrete cells, measuring more than 138 feet in circumference, are utilized at the end of the dock pilings to provide major support of the structure. Also, it has 26 large wooden pile clusters that are spaced approximately 50 feet apart. Each cluster is made up of 15 piles, measuring 6½ feet in diameter.

To afford proper support to the pilings, a total of 24 wire rope sling assemblies of 1½ inch rope, averaging 50 feet in length and equipped with turn buckles were used in linking each of the pile clusters. One large cable assembly with its swaged end fitting was wrapped around each of the concrete cells and connected to the last pile cluster by a looped sling. In addition to the pile supporting cable assemblies, 12 special swaged wire rope assemblies were anchored on shore and looped over every other pile cluster. In all, a total of 40 cable assemblies were utilized to increase the strength of the pile clusters in resisting impact loads when coal ships are tied up at the dock.

Picture by courtesy of American Chain & Cable Co., Inc.

Are Colors Losing Their Safety Value?

The increasing tendency of industrial designers to harmonize and beautify the interior of new factories may play havoc with safety precautions, says Robert A. Fergusson, president of Rust-Oleum Corporation. Strong colors which signify dangerous equipment or moving equipment are being toned down to fit some artistic decor, he said, with the result that the colors may no longer be recognized as danger signals.

Fergusson pointed out that the American Standards Association worked out a code of color symbols for factories: Alert orange for portions of machines or equipment that might crush, cut, electrocute or otherwise injure. Vivid yellow to indicate tripping or moving equipment hazards, strike-against objects such as low beams. Pimento red for all fire protection and fire fighting equipment. Precaution blue, to mark electrical controls, elevators, less hazardous areas, operating levers. Safety green to identify first aid kits, safety equipment and locations. Purple to warn against radiation hazards. White, gray and black are standard for aisle markers.

Since, in an emergency, the quick recognition of the contents of a piping system is of paramount importance, colors were also generally designated for pipes. Red for fire protection pipes, yellow or orange for dangerous materials, green for safe materials, bright blue for protective materials, and deep purple for extra valuable materials.

"It is true," said Fergusson, "that a strong blue pipe may not look artistic next to a bright green one, particularly if both cross near a vivid yellow overhead obstruction. But each color means something in factory danger signals. Employees moving from one plant to another understand their surroundings at a glance. With some modern factories going in for coral, lavender, tan, turquoise, and other exotic shades, they have tended to use subdued danger signals. This is an unsound development. We set a high store on the decorative value of paint, but not at the expense of safety. Danger symbols come first."

For the week beginning March 17th, famous Times Square in New York City was renamed "Safety Square." In addition, Mayor Robert F. Wagner issued a proclamation marking New York's observance of Greater Safety Week and delegates from all parts of the nation attended the 27th Annual Greater New York Safety Convention and Exposition at the Statler Hotel.

The convention was sponsored by the Greater New York Safety Council and seventy cooperating agencies. More than 8,000 safety experts and workers in almost every field of accident prevention were in attendance.

The exposition presented in 140 displays the latest devices created by man to protect himself and his property against his own carelessness or fallibility and against unkind forces of nature. In addition to new devices, it presented improved models of standard safety equipment.

A theme of this year's exposition was that it is fashionable to be safe. New, stylish lines were shown in body protection and protective apparel from helmets to shoes.

A fume-free internal combustion engine which was shown has a propane conversion unit and catalytic exhaust. This makes it possible to operate in enclosed and confined areas without danger of carbon monoxide and without smoke or odors. A mechanical back-up alarm, for trucks and buses, is a self-contained unit, fully automatic, that is attached to the rear wheels where it operates by gravity only, independent of electrical circuits or the speedometer. Several new types of gas alarms, both for combustible and poisonous fumes were displayed. They flash lights or give audible warnings when gas concentration approaches the danger point.

A new midget industrial vacuum cleaner is made of non-ferrous castings and has no moving parts or electrical spark, permitting its use in close quarters, hazardous locations and in proximity to combustible materials. There is quick interchangeability from dry pick-up to hose use for wet pick-up or transference of liquids.

An emergency inhalator, weighing less than nine pounds and having only one valve to turn, makes it possible for on-the-spot administration of oxygen, before the stretcher arrives, while being carried into the ambulance, during the ambulance ride, and while being carried into the hospital, without interruption.

An automobile manufacturer set up a spectacular display, equipped with the smallest cinemascope screen. Crash scenes were shown in color on the midget screen and a narrator explained the importance of such safety aids as seat belts, collapsible steering wheel, crash pads and sun visors.

The days of the old movies with the buzz saw scene were recalled—except that there is no beautiful heroine saved from the villain at the last moment—by the display of saw guards. One of the "heroes" is a new pusher guard, intended for home workshops as well as industry, dedicated to the prevention of finger amputations.

There were enough new models of protective apparel for a complete safety fashion show. Some of the attractive headgear, for women and

SM goes to

men, is a far cry from the original hard helmets. The new gear, because of better fit, lighter weight and permitting better vision, is safer than the old and stronger against crash impact. Even face shields have a new look. New models, with a head frame of unbreakable soft plastic, mold themselves to any head shape, eliminating uncomfortable pressure points. Asbestos suits for firefighters and others working in intense heat are of lighter weight, allowing greater maneuverability with increased heat resistance and deflection. Gloves to protect wearers against acids, other chemicals, flame or heat, abrasives and other painful or disfiguring agents appeared in profusion this year.

Goggles and safety eyeglasses featured interchangeable lenses and side shields where needed, within frames redesigned for greater comfort and better appearance. Protective aprons, sleeves and even spats were also shown.

Safety shoes have been given so much style that several of the models could be worn to a dinner party without causing raised eyebrows. Yet, the wearer could dance with an elephant and have his toes stepped on without damage. Models were shown to meet specific hazards, from protection against crushing to safeguarding the wearer from electric shock. There were special non-skid shoes, steel-toed shoes, shoes with additional full instep shield for yard gangs, riggers and truckmen, and dressy safety shoes with talon fastener for quicker slipping on and off.

Aids for detecting physical inadequacies in motorists or in applicants for general or specialized work were shown in operation, with visitors invited to take the tests. The sponsors of a new type of testing and training device for night vision and glare recovery for motorists pointed out that the annual traffic death rate on a mileage basis is approximately three times as great during the hours of darkness as in daytime.

Another exhibitor demonstrated a rapid screening test for occupational vision.

A new spray gun receiver that keeps the nozzle in a solvent solution when not in use, yet permits instant use, prevents paints or other sprays from hardening and clogging the opening.

There were several safety devices to give warning when other safety devices fail. One was a tank overfill alarm. This gives a loud, continuous horn warning in the event that automatic controls, gauges, indicators or meters fail and the level of liquid in a storage tank exceeds safe limits. The unit consists basically of a cylinder of compressed gas, a release-mechanism operated by mechanical linkage, and a loud horn.

Audio testing devices and hearing aids included a gadget that clips onto the telephone earpiece and is regulated for volume by finger.

Salt tablets with disposable dispensers, protective creams and lotions, non-tippable ladders, firefighting equipment, non-skid mats, machine guards and mine safety appliances are among many other accident-prevention aids displayed.

At the convention meetings authorities and delegates discussed all phases of industrial fire and accident prevention, catastrophe control, shipbuilding and ship operation, aviation, industrial health, pulp and paper safety, materials handling, the hazards of noise, building construction and management, public utilities, radiation control, and home and school safety. Following are highlights from some of the addresses presented at the various sessions.

Costly Itch: Occupational dermatitis is a hundred million dollar itch, the convention was told. One out of every hundred workers in the United States suffers from a serious skin condition induced by his job, Dr. Arthur F. Mangelsdorff told the session on body protection. Based on ten weeks of compensation in the average dermatitis case, he said the costs to industry were "estimated at well over $100,000,000 a year."

Dr. Mangelsdorff, associate medical director of American Cyanamid Company at Bound Brook, N. J., delivered a paper on barrier creams to prevent contact with dusts, dirts, and irritating materials. The speaker said that most of the barrier creams and ointment formulations so far produced have been "disappointing" and that further extensive investigation was needed. Dr. Mangelsdorff said barrier creams gave limited protection against some occupational conditions and had "a pyschological value in having the employee feel that he has done something to protect the skin," but that their greatest value so far seemed to be that the employee had to wash them off thoroughly which, in turn, cleansed his skin of the irritating agents as well.

Safety Increases Production: Studies of manufacturing processes, begun to reduce accident hazards, have in many instances resulted also in changes that have increased production and cut costs, according to John E. Kane, supervisor of safety of General Motors Corporation's Ternstedt division at Trenton, New Jersey.

Mr. Kane showed with slides new devices, including use of the "electric eye," for avoiding punch press accidents. But the best safety device, he said, is an operational procedure that makes it unnecessary or impossible for a worker to put a hand under the moving part. He showed how air ejection methods have been applied for moving the punched parts.

As an example of a change in manufacturing process, Mr. Kane described the turning out of seat adjuster rollers:

"We used to make this roller in our Die Cast Department with the twelve-cavity die; then, after casting, trim the flash with the trim die in a punch press. It was a dangerous operation and the method presented an easy temptation for the trim operator to place her hand under the die, because of the nature of the part.

"A change was needed. Instead of die-casting the part, we used cold roll steel by blanking out the round inserts. A magazine loader was added to the press in front of and on the outside of the die guard area. The die was designed so that the part was curled and sized in one stroke of the press. The set-up was so improved that one operator can operate two presses simultaneously. The results were: It eliminates accident potential, keeps hands out of the die area. There has been an increase in production output and a cost saving in the part produced."

Machine Guards: How a seemingly magic "curtain of light" prevents loss of fingers and hands in the formerly dangerous industrial operation of punch presses was described by Stephen V. Hart, vice-president of Electronic Control Corp., of Detroit. With the aid of a motion picture Mr. Hart showed the construction and application, in West Germany and the United States, of the protective "curtain" formed around the danger area by use of wide-area electric eyes. He said:

"The 'curtain of light' watches for the slightest intrusion of a hand into the danger area. The guard is designed for presses that can be stopped at any point in the operating cycle. When any part of the 'curtain' is interrupted, the control automatically stops the press. The control is a fail-safe design.

"Press brakes and power shears are guarded by a pencil-beam of light. The projector has a spinning disc which 'chops' the light beam into light pulses. The receiver converts these light pulses into electrical pulses. Because the amplifier responds only to those pulses, no other light can affect its operation; the effect of any circuit failure would be the same as from the interruption of the light beam. Any intrusion between projector and receiver prevents tripping of the machine or stops it."

Restage the Accident: Reenactment by injured workers, in so far as is possible, of their accidents was proposed as a means of preventing other accidents to the same employee or similar accidents to others. Edwin F. Ahern, director of training and safety for the Hotel Taft, suggested this technique at the session on hotel safety.

Mr. Ahern cited an example of this procedure in the case of a fall, the most common type of accident in industry and in the home. Suppose, he said Joe Doakes has fallen down the stairs at the timekeeper's entrance.

Reenactment on the scene, he said, will show whether Joe was wearing glasses, whether he was preoccupied, whether he was wearing shoes in disrepair that caused him to stumble, whether his uniform or trousers were too long, whether the stairs were wet or slippery, the handrail loose, a step broken, or the stairway sufficiently lighted.

Mr. Ahern said this method often provided the first clue that a worker needed help to overcome conditions that led to accident proneness. He said Joe might be preoccupied because of problems at home or he might be in need of glasses or the glasses he wears may be no longer adequate.

3,000 Injuries per Day: Every nine seconds there is an industrial accident which causes a worker in New York State to lose time from his job, the session on building management was told by Philip E. Tranfield. He said statistics of the Workmen's Compensation Board showed that more than 3,200 workers in New York State suffered on-the-job injuries on a normal working day. Mr. Tranfield, mana-

(Continued on page 57)

It need not have happened!
"Watchman Failure" noted on many official reports of weekend fires—is a tragic reminder that many disasters need not have happened. An alert watchman can do more good fighting a fire the first five minutes than the fireman can the next five hours.
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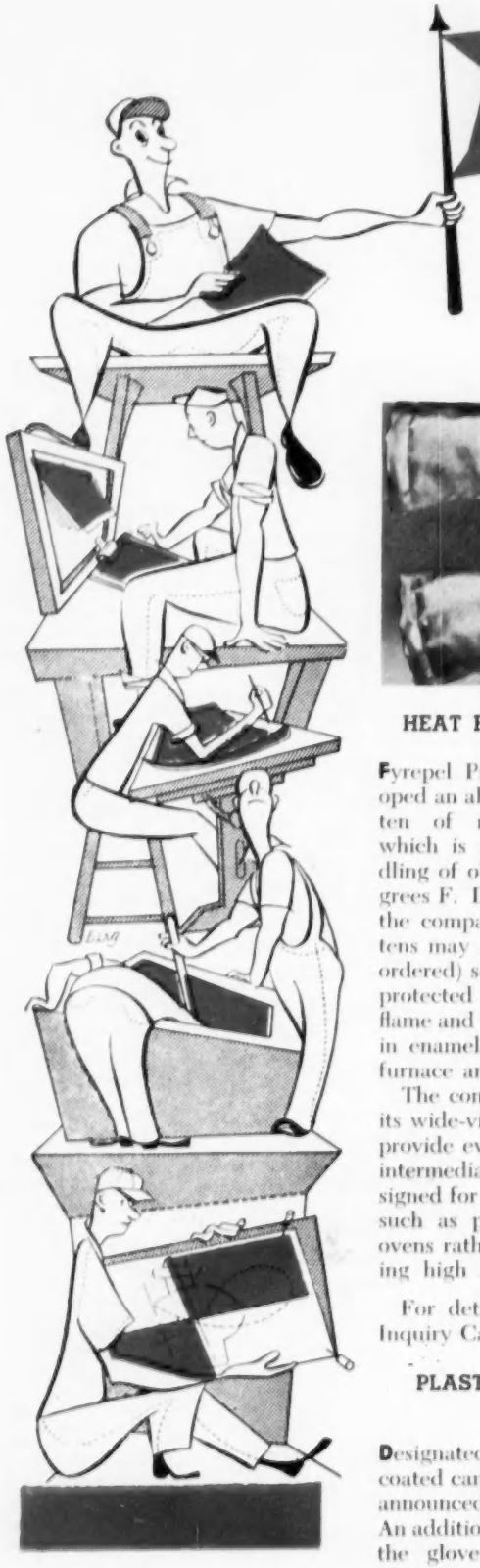
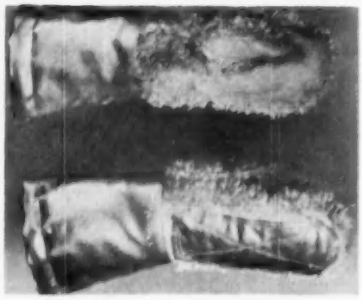
(For details, use Key # D-15 on card on page 73)

KEEPING UP WITH





HEAT RESISTANT MITTENS

Fyrepel Products, Inc., has developed an aluminized glass cloth mitten of multi-layer construction which is said to permit the handling of objects as hot as 1800 degrees F. Designed to be worn with the company's Kool Suit, the mittens may also be worn (as well as ordered) separately. The wearer is protected against heat, sparks, flame and hot metal splash as found in enameling, diecasting, welding, furnace and foundry work, etc.

The company has also improved its wide-vision Kool-Suit helmet to provide even greater visibility. An intermediate duty helmet, it is designed for radiant heat applications such as paint drying and curing ovens rather than for those involving high ambient temperatures.

For details, use Key **#PC-1** on Inquiry Card on page 73.

PLASTIC-COATED WORK GLOVES

Designated the 51-2, a new plastic-coated canvas work glove has been announced by David's Gloves, Inc. An addition to their Plastilife series, the glove features a double-dip plastic coating plus a seal coat over both dips of plastic. The glove is being offered in both knit wrist and gauntlet styles. The manufacturer claims that the gloves will not crack or peel, and, to a certain extent, will not become sticky in contact with heat, nor brittle on cold weather.

For details, use Key **#PC-2** on Inquiry Card on page 73.

NON-SLIP GRIP GLOVES

A new finish is available from the Edmont Mfg. Co. for their Snorkel coated work gloves. This finish is said to offer a sure, non-slip grip for greater safety in many industrial operations.

Coated with a vinyl plastic, the gloves have a high resistance to

abrasion, oils, acids, caustics and many solvents, making them ideal for handling operations—particularly of oil-coated or other slippery materials. The gloves also feature jersey liners which make them highly flexible and comfortable. Available styles include a fully-coated knitwrist (illustrated), 12" gauntlet and a palm-coated knitwrist. All have the non-slip finish.

For details, use Key **#PC-3** on Inquiry Card on page 73.

DURABLE HEAT RESISTANT FABRIC

The Asbestos Textile Div. of Raybestos-Manhattan, Inc., has developed a fabric for use against high

PROTECTIVE CLOTHING DEVELOPMENTS

heat factors. Known as Silvabestos, it is the result of a search for a fabric to preserve the insulation qualities of asbestos cloth while increasing resistance to abrasive wear and reducing the weight. The fabric consists of a lightweight asbestos cloth coated with a mixture of resins and aluminum.

In tests conducted, the fabric showed a nearly three-times increase in wear resistance as compared with the same cloths uncoated. It was also shown that the coated cloths furnish 27 to 56 percent greater retention of tensile strength than equal weights of uncoated cloths after subjecting both to 450 degrees F. The fabric is being used in the manufacture of many heat protection products including gloves, mittens and other clothing items. Because of its relatively light weight and flexibility, the fabric is said to provide a greater measure of comfort than ordinary asbestos cloth products.

For details, use Key **#PC-4** on Inquiry Card on page 73.

ACID-RESISTANT GLOVES

The development of a new industrial glove, made of Butyl rubber to protect hands from the most destructive acids, has been announced by the Glove Division, Hood Rubber Company.

This glove is made of an exclusive Butyl rubber compound that is said to be non-absorbing. It resists such destructive agents as sulphuric, nitric and phosphoric acids, oxygen, ozone, oils, salts and many others. The company reports testing this new glove under actual working conditions, with excellent results, in the plant of one of the largest chemical manufacturers in the world. The glove is a one-fingered model, seam and crotch reinforced. It is light green in color and has a rough, stippled finish to provide a non-slip grip.

For details, use Key **#PC-5** on Inquiry Card on page 73.

SEAMLESS FINGER GUARD

Greater safety and freer finger movement are said to be provided by a seamless finger guard introduced by the Advance Glove Mfg. Co. According to the company, the finger guard is especially suited to assembling, electrical spotting and the handling of small parts. It protects against possible cuts and bruises from rough or sharp objects, edged tools, etc.

Made of plastic, it is lined with perspiration-absorbent cotton and is snug-fitting, yet comfortable to wear. The finger guard is available in sizes for both men and women.

For details, use Key **#PC-6** on Inquiry Card on page 73.

ALUMINIZED ASBESTOS CLOTH

Kamklad, a new fire protective aluminized asbestos cloth said to reflect over 90 percent of radiant heat has been introduced by the Keasbey & Mattison Co. The company states that safety garments made of Kamklad make it possible for the wearer to withstand temperatures in excess of 2500 degrees Fahrenheit without discomfort or ill-effect. Field tests in steel mills have disclosed that this new fire protective cloth makes it possible to change ingot reheating furnace doors while operating at 2100 degrees Fahrenheit.

Kamklad is a tightly woven asbestos cloth surfaced by a special process with a heat protective aluminum foil. The smooth aluminum foil surface reflects radiant heat, shielding the wearer from this major hazard. Flying sparks and cinders fall off without damaging the material. It resists water, oils, and, to all practical purposes, has the same corrosion-resistant qualities as the aluminum with which it is covered.

For details, use Key **#PC-7** on Inquiry Card on page 73.

CHEMICAL RESISTANT SUIT

A rubber DeLuxe work suit of lightweight material that has good wearing qualities has been announced by B. F. Goodrich Industrial Products Co. The suit, colored yellow for safety and easy identification, weighs 2¾-pounds in medium size. Other rubber suits in the same size range from 4 to 5⅞-pounds in weight, according to the company.

The suit is made of high-strength nylon fabric that resists ripping and tearing. The synthetic rubber coating resists acids, greases and most chemicals and will not peel. Laboratory tests of the nylon fabric have shown its tensile strength to be nearly four times as strong as ordinary fabrics, the company claims. The suit consists of bib-type overalls and a jacket and is available in small, medium, large and extra-large sizes. A storm hat, a part of the suit, comes in sizes 6¾ to 7¾.

For details, use Key **#PC-8** on Inquiry Card on page 73.

LIGHTWEIGHT ASBESTOS CLOTHING

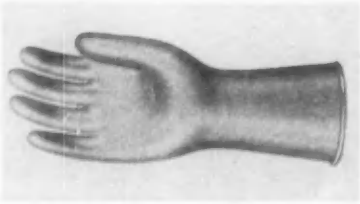
The Allied Glove Corp. has marketed a line of asbestos gloves, mittens and other clothing designed to protect against heat hazards while providing a high increase in the wearing quality of asbestos clothing. The fabric, made from asbestos fabric coated with a mixture of resins and aluminum, is known as Silvabestos. Lighter in weight than customary asbestos, it is said to afford up to three times its durability.

According to the company, a series of tests has demonstrated that the cloth provides formidable wear resistance plus improved resistance to heat degradation. It preserves the insulation advantages of asbestos cloth, but with a reduction in weight, resulting in greater flexibility and wearing comfort in clothing produced in the fabric.

For details, use Key **#PC-9** on Inquiry Card on page 73.

DURABLE LATEX GLOVES

A large selection of industrial gloves made from liquid latex featuring high tensile strength is being offered by the Industrial Div. of The Wilson Rubber Co. Wil-Gard latex industrial gloves incorporate curved-finger design, and are said



to have good wearing qualities, pliability and comfort under hard, continuous service. They are resistant to most common industrial gases, chemicals and acid solutions, according to the company.

A variety of styles are available, including general-purpose gloves, white latex surgical-type gloves for precision work, gloves reinforced for extra strength in fingers and palms, tanners' mittens in fingerless and one-finger models, and thumb and finger cots. Smooth and firm-hold finishes are available.

For details, use Key **#PC-10** on Inquiry Card on page 73.

HEAT RESISTANT FABRICS

Ray-Tex, a fire and heat resistant fabric that is said to be tough, durable and versatile, combines an aluminum compound with a fabrication of tough cotton cording. According to the company, Frommelt Industries, the fabric will not crack, peel or slough off in heat or cold. It is highly resistant to rough usage, to oils, greases and most acids and alkalis and can be easily cleaned with solvents, steam or soap and water. The product is available in fire blankets, self-standing shields, curtains, drapes, covers and other similar items.

The company has also announced an improved version of its Ray-Foil radiant heat protective fabric. Retaining the best protective qualities of the original, it is said to have greater strength, flexibility and durability. Mylar, a method of laminating the metallized coating to the fiber glass fabric, is credited with producing the improved fabric. Ray-Foil is available in shields, curtains, drapes and various garments developed to provide reasonably comfortable working temperatures within inches of high radiant heat.

For details, use Key **#PC-11** on Inquiry Card on page 73.

NEOPRENE-LATEX CLOTHING

A medium-weight line of neoprene-latex clothing has been introduced by the H. M. Sawyer & Son Co. The clothing is available in suits, jackets, pants and coats, and is intended for use where heavyweight garments are necessary. The new line is recommended, the company states, where water, oil, grease,

chemicals and mild acids are hazards.

The garments are the result of several changes in the manufacturing procedure of the firm's heavyweight clothing. For one, they do not include an extra, inside neoprene-latex coating. Also, it is reported, a new method of applying the coatings affords lighter weight, less bulk and greater peel-resistance. Where their use is permissible, the medium-weight garments mean protection with an increase in comfort to the user.

For details, use Key **#PC-12** on Inquiry Card on page 73.

CHEMICAL-RESISTANT GLOVES

The Surety Rubber Company has announced a new rough-finish coated fabric glove designed to provide a positive grip and withstand oils, acids and solvents.

The coating combines a vinyl base and Surety Sureseal rough finish, affording high resistance to all chemicals as well as resistance to cutting, snagging and abrasion. Fingers are curved for hand comfort and the Surety wing thumb construction eliminates side seams and overcomes tearing out at the thumb. Designated Griptite, the gloves are available with coated palm and knit wrist or fully coated with knit wrist, twelve-inch gauntlet or safety cuff. Women's sizes with coated palms are furnished with knit wrist only.

For details, use Key #PC-13 on Inquiry Card on page 73.

NON-SLIP GLOVES

A new line of rubber coated industrial gloves called Grip-all, that have an impregnated extra-coarse rubber dust surface, making them highly resistent to slipping, is being introduced by Hood Rubber Company, a division of The B. F. Goodrich Company.

The new line of Grip-all gloves is heavyweight for long wear and protection, yet remains completely flexible to allow free finger movement and enable workmen to grip hard and fast. Hood's new Grip-all gloves are designed for workmen handling sharp, slippery objects such as plate glass, sheet metal, etc., and have been tested in glass-making plants. The gloves are available in five different styles. They include palm and fully-coated styles with knit wrists and 2" and 4" safety cuffs. In the photograph are shown (left to right): palm-coated, 2" band safety cuff with elastic strap (R-58); palm-coated, knit wrist (R-55) or fully coated knit wrist (R-56); palm-coated, 4" safety cuff with elastic strap and knuckle protection (R-60); and palm-coated, 2" band safety cuff (R-54).

For details, use Key #PC-14 on Inquiry Card on page 73.

AIR-SUPPLIED SUIT

An air-supplied suit, which provides comfort and health protection for workers exposed to temperatures of 130 degrees F. and

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The H. H. Scott Sound Level Meter is an unusually compact instrument, designed for portability, accuracy and ease of operation. It weighs only 2 pounds 7 ounces, and you can hold and operate it with one hand. Non-technically trained personnel can learn to operate it in five minutes.

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(For details, use Key # D-16 on card on page 73)

upward, has been introduced by Union Industrial Equipment Corp. Prior to the development of the suit, work in high temperature enclosures was limited to 20 minutes in and 20 minutes out, while 150 degrees F. was the maximum permissible temperature established. It was found that in temperatures of 150 degrees F. and up the workers' pulse rates increased, blood pressures acted up and body temperatures rose. The new ventilated clothing is said to allow a work schedule of 105 minutes in and 15 minutes out at temperatures of 175 degrees F.

The suit consists of a pair of coveralls made from flame resistant cotton, Dynel or any other fabric specified. A removable air manifold is included at the back, from which the air is distributed through flat, flexible tubes. These air ducts are shown in black in the accompanying photograph. The suit is so constructed that the manifold and component parts are readily detachable, for cleaning and laundering puposes. A headpiece consisting of a safety helmet and hood are available as a companion piece to the suit. Air flow at the neckline of the suit can be regulated to circulate under the hood allowing complete breathing and cooling comfort.

For details, use Key **#PC-15** on Inquiry Card on page 73.

LONG-WEARING ASBESTOS CLOTHING

A line of personal protective clothing made from Silvabestos fabrics has been marketed by the Star Glove and Asbestos Co. Various products, including gloves, mittens, coats, etc., are available in the fabric (a combination of resins and aluminum applied to lightweight asbestos cloth). The clothing is recommended for use wherever contact with hot materials is a major hazard.

Tests conducted are reported to have shown the fabric to provide up to three times the wear resistance of regular asbestos cloths. Substantial increases in resistance to heat degradation at high temperatures is also claimed. According to the company, clothing made from the fabric is lighter in weight, flexible and comfortable to wear.

For details, use Key **#PC-16** on Inquiry Card on page 73.

HARD HAT WINTER LINER

A winter liner for hard hats, known as the WL'57 Winter Headwarmer Hood, has been introduced by United Mfg. Facilities, Inc. The fabric liner, which can be worn with all types of hard hats and caps, provides protection against both cold and wind. Tying under the chin of the wearer, the close-fitting hood covers both the head and ears.

The liner can be folded or rolled and carried in a pocket, ready for use as necessary. It is also washable and available in several sizes.

For details, use Key **#PC-17** on Inquiry Card on page 73.

LONG-WEAR GLOVES

A new line of industrial gloves featuring a new leather with exceptional wearing qualities has been announced by the Scientific Industrial Supply Co. According to the manufacturer, tests by independent laboratories indicate that this leather, known as Horsebutt Split, gives up to three times as much wear as other leather gloves. The company also cites excellent results in dry cleaning tests of the gloves.

The gloves are extremely flexible for unusually good freedom of movement due to a special tanning process. This process also retains the leather's resistance to abrasion found in the natural Shell Cordovan Horsehide from which the leather is split. The new line of gloves includes three basic styles for industrial uses: safety cuff, gauntlet, and knit-wrist. All styles have canvas backs.

For details, use Key **#PC-18** on Inquiry Card on page 73.

ACID-RESISTANT CLOTHING

A new line of protective clothing has been announced by the Safety Clothing and Equipment Co. The clothing is made from nylon which has been thoroughly impregnated on both sides with a resin compound. Calendering of the fabric is said to assure a good bond that defies peeling and provides longer wear and flexibility. The material is light in weight and offers protection against water, acids, caustics, chemicals, oil, grease, adhesives, etc., according to the company. It also provides effective protection against industrial dermatitis. Abrasion resistance is high, so that the fabric is difficult to tear.

Clothing made from the resin-impregnated nylon is suitable for use in industrial plants, chemical plants, refineries and in the construction and mining industries. It is available in a complete range of styles, including aprons, coats,

jumper suits, jackets, pants, helmets, leggings, sleeves and spats. All standard sizes are available.

For details, use Key #PC-19 on Inquiry Card on page 73.

HEAT RESISTANT GLOVES & MITTENS

New gloves and mittens to provide protection against high heat exposures have been introduced by the American Optical Co. According to the company, the long-wearing gloves and mittens are suitable for operations such as die casting, drop forging, block bending, steel mill coil tying, etc.

The gloves, designated SC 5X166, and mittens, designated SC 6X151, are made from chrome tanned split cowhide leather. They are heavily lined for greater heat insulation. The mitten is available in a one-finger type as well as in a full mitten (SC6X180). Heavily-lined duck cuffs can be ordered in place of leather cuffs.

For details, use Key #PC-20 on Inquiry Card on page 73.

NEW GLOVE LINE

A completely new work glove line, flexible enough to meet virtually any industrial hand protection need, is now being produced by the Pioneer Rubber Company. Called Pacemakers, the new line incorporates 15 design innovations.

Each glove in the Pacemaker line is made of neoprene coated flannel in three different weights: light, industrial and heavy duty. In addition, there is a choice of knit wrist and 12-, 14½-, and 18-inch gauntlet styles. Of special interest is the heavy duty "Hot 'N Cold" glove, which features two 8-ounce shells, face-to-face napping for extra insulation, double-napped inner lining, bar-tacked fingertips and non-ravel locksmith binding on gauntlet. Light and industrial weight Pacemakers are available in black, heavy duty in mahogany red with non-slip finish on palms and fingers. Suggested uses for Pacemakers include jobs where resistance to extreme abrasion and chemicals is important; jobs where gloves will encounter acids, caustics, solvents, greases or oils; the handling of lumber, wood, concrete, tile, and clay products; and for handling metals.

For details, use Key #PC-21 on Inquiry Card on page 73.

HEAT PROTECTIVE COAT

Frommelt Industries has announced a heat protective coat for use in areas of medium and high radiant

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(For details, use Key # D-17 on card on page 73)

heat. Ray-Foil metallized mylar laminated to a glass cloth backing forms the middle layer of the material from which the coat is made. A lining of fabric is used to protect the wearer from contact with the glass cloth backing. The outer layer of the material is white, lightweight duck which is said to be resistant to fire, water and mildew. The Ray-Foil layer's function is to trap radiant heat waves after they have penetrated the fire resistant duck affording the wearer protection from the heat.

Protekotes, as the garments are called, are available in medium and large sizes and lengths of 34 and 44 inches. The coats may be ordered with or without a Ray-Foil lining in the sleeves and chest area. A Ray-Foil lined hood is available and can be attached to the coat.

For details, use Key **#PC-22** on Inquiry Card on page 73.

BLACK LEATHER WELDER'S COAT

The Aljay Mfg. Co., Inc., has introduced a lightweight welder's cape and bib made of black leather. The garment, known as the Heliarc, is said to absorb ultra violet and infra red rays, thereby keeping the wearer cooler and more comfortable while working. Because it is light in weight, the wearer also experiences less fatigue.

Other features of the welder's cape include adjustable snaps, riveted construction at stress points and resistance to heat. The leather used is soft and pliable making the garment comfortable to wear. Available in full-cut sizes.

For details, use Key **#PC-23** on Inquiry Card on page 73.

CORRECTION

On page 27 of the April issue, it was stated that fork truck batteries can be easily charged in one to three minutes. It should have read that they can be easily "Changed" in one to three minutes.

Planning for Safety
(from page 18)

b. Should sprinklers be avoided due to possible greater damage from water than fire?
c. Is there sufficient ventilation to prevent the accumulation of an explosive atmosphere?
d. Are hazardous areas properly partitioned off to prevent spread of the holocaust in event of fire or explosion?
e. Is there a sufficient number of fire extinguishers of proper type strategically located throughout the plant?
f. Is the potential danger great enough to warrant a private plant fire department?

7. First-aid Facilities

In modern plants of fair size, the first-aid facilities today approach the standard of small hospitals. Indeed, to my experience in one plant, the facilities and service was so good that the local medicos complained that they were being deprived of patients. It is hardly necessary to carry the installation to such an extent, but facilities for first aid are necessary in every industrial plant.

The scope of the installation will vary with every plant and the potential dangers of the business involved. Most modern plants of small size have at least one good size dressing station, ample lavatory facilities, and a cot room. Many today have a full time nurse on duty and contractual arrangements with a local doctor for service. If a full time nurse is not engaged, several employees who have extensive first-aid training are always available.

From this modest start, plant first-aid departments increase in size, scope and facilities up to twenty room layouts. Usually such installations accommodate employee-examining rooms, segregated waiting rooms, doctors' and nurses' quarters, and offices, medicine rooms, X-ray rooms, etc. The only suggestion I can offer is that the facility should be designed on the basis of adequate requirement to meet the needs of the industry and the plant population. It is better to have a little too much than not enough. Employees today demand adequate health protection.

8. Flow of Material and Good Housekeeping

The old adage "a place for everything and everything in its place" is good advice for every industrial plant management. It is the plant layout engineers' responsibility to provide the place—and the supervisors job to keep things there. If this team does a good job, accidents and costs will be reduced. In plants where the housekeeping is good and material flows smoothly from operation to operation, the safety record is usually good. There is no magic formula for the solution of this problem. You must simply work at it all the time.

There are some points for the plant layout engineer to think about in preparing the layout, however He should:

a. Provide space at every work station for all things that occupy space whether they be plant equipment or material in process.

b. Know how every piece of material can or will be handled throughout the plant from receiving to shipping. There is a great tendency to just leave it up to the boys in the shop to move it the best way they can.

c. In your layout, keep in mind that waste materials must be removed from the plant constantly. Many engineers neglect to provide efficient waste removal facilities which accounts for the vast accumulation of junk in many plants. Remember that it costs just as much per labor hour to remove waste material as to move productive, saleable material.

9. Handling and Storage

We now reach the apex of the problem. As stated earlier, material-handling accounts for more industrial accidents than any other plant operation. If an improvement in handling had no other incentive, the reduction of accidents which in turn reduces costs would in itself provide the motive.

Basically, there are two sources of material-handling accidents. They are:

a. Injuries due to the lack of proper

or adequate mechanical aids to perform the operation.

b. Injuries due to faulty mechanical handling equipment.

There is, of course, a third source which does not involve equipment. This is the human failing or at least we like to call it that.

The plant layout engineer figures into both the basic causes of these accidents. In the first case he has failed to provide the proper and adequate equipment to perform the operation. In the second case, he has failed to see that the equipment provided was properly designed and installed.

A Fixed Responsibility

It could be debated at length just how far the plant layout engineer's responsibility extends in these matters. You may be inclined to say that these responsibilities fall upon the operating or maintenance personnel. Perhaps you would be correct. But to the victim of an accident, particularly of a lost-time accident, such details offer little comfort. We should not be squeamish about party lines and spheres of responsibility. If it is in the interest of safety, or of better plant conditions, I think it is everyone's job. There should be a definitely fixed responsibility in every plant for each of these things, but safety or improvement of any kind should not be ignored just because it is "George's job."

Material storage is also a frequent source of accidents. When you consider how often material is picked up and set down in its path through the plant, there must be a right way to do it. Unstable piles of material, blocked aisles, material placed in such a manner as to require reaching, twisting, turning or shoving, all lead to accidents.

Today there are many hundreds of devices on the market that enable operators to handle and store material without physical strain. It is the task of the planning engineer to become familiar with these "handling tools" and to engineer them into the layout design.

In summarizing, mention should be made of visual aids in planning the plant. When people can see things, they understand them much better. Planning engineers, technically trained in the language of engineering drawing, may have an excellent mental picture of the plant they are planning. But the many other persons who have a stake in the project do not necessarily share this understanding. The three-dimensional layout reduces all these mental pictures to one of common understanding. (See the cover picture.) Everyone from janitor to president will have a better understanding of the proposed plant if it is planned that way.

Here's a paraphrase of a familiar slogan—"Safety belongs to those who plan for it."

From an address presented at the 1956 meeting of the American Society of Mechanical Engineers. Pictures by courtesy of Westinghouse Electric Corp.

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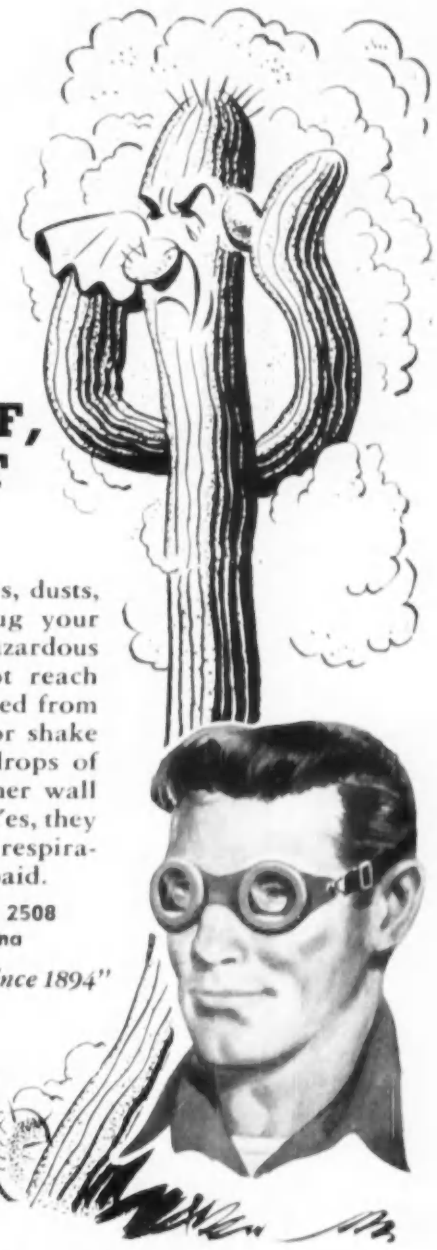

(For details, use Key # D-18 on card on page 731

Fitting the Worker to the Job

This book "Physical Abilities To Fit the Job," by Bert Hanman Engineering Department, American Mutual Liability Insurance Company, primarily is for industrial physicians and engineers, although written for the most part in terms that management can understand. It is a solid attempt to bring management, medicine and engineering closer together in doing something about adopting better methods for dealing with the medical aspects of job placement and adjustment. It is well illustrated and complete with a manual and forms telling how to determine each worker's physical abilities and relate them to job requirements safely and productively.

The reader will find this publication is not just another book on "selective placement for the handicapped." Rather, it is geared to an interpretation of how best to analyze the physical composition of each and every worker and each and every job in such a manner as to keep each person within the range of his abilities and out of the danger of causing injury to himself or others. In doing this, not only is it important to make sure that the new employee is correctly matched with his job and can progress normally within his chosen field of work without striking a physical snag later on, but also is it necessary to know how to adjust regular employees who become injured or ill, as well as aging and older workers when they start to sag.

The book contains a plan to help every employer, however small or large. For the firm with a physician's services or without them, with or without a personnel man, with or without a job analyst, there is a plan. Furthermore, each plan is a tested and proved time and money saver for both employer and employee.

Another feature is that the book does not play just one string on a fiddle but discusses thoroughly all known methods for matching the physical characteristics of workers and jobs. This makes it possible for management and medical men to make comparisons with what others are doing. But more important than this, it points the way to avoid the mistakes that others are making.

The book is both highly informative and practical, and is based on industrial personnel practices in America, Canada, and twelve European countries. With its specific and positive point of view, it should go far in helping to expand the philosophy of industrial medicine and engineering.

The price of the book is $2.50 and can be ordered from: Engineering Department, American Mutual Liability Insurance Company, 142 Berkeley Street, Boston 17, Mass.

Eye Care Pamphlet

"A blind worker waits at an intersection. A young man assists him across the street.

"'I'm new at this,' the blind man says. 'Lost my sight six months ago. Some chemicals exploded in the factory where I worked—right in my face.'"

These words are from the introductory paragraphs of a 28-page pamphlet entitled "Save Your Sight" published by the Public Affairs Committee in cooperation with the National Society for the Prevention of Blindness. The pamphlet is being offered at 25 cents per single copy by the National Society, 1790 Broadway, New York 19, N. Y. to increase public awareness of the need for eye care.

There are about 300,000 industrial eye accidents every year, the booklet declares. Sixty thousand of these accidents are compensable and twelve thousand cause some serious permanent disability. Every recognized safety authority believes that at least 90 percent of these injuries could be prevented by wearing some form of eye protection equipment.

The pamphlet goes on to describe the Wise Owl Club of America, an industrial eye safety organization, sponsored by the Society. The purpose of the club is to encourage the use of safety eyewear to reduce needless and costly eye injuries. Each of the members of the club, which includes men and women workers and vocational school students, has saved the sight of at least one eye by wearing eye protection at the time of an on-the-job accident. The club claims more than 11,000 members in over 1,625 plants and vocational schools in all 48 states, Canada, Hawaii, Cuba and Puerto Rico.

More than $150 million is spent annually for care of the blind, the pamphlet continues. Counting compensation costs, medical expenses and lost production, eye injuries cost industry well over $200 million a year. In contrast to these sums, less than $2 million has been allotted for research in the blinding diseases, and an even smaller amount for organized prevention services.

The booklet also includes sections on lighting and color in industry, eye diseases, television and eye safety for children.

The booklet sums up the elements of a good industrial vision program: 1. Testing for basic visual skills; 2. Analysis of jobs for visual requirements; 3. Eye-safety equipment with correction, if necessary, to suit the worker's eyes; 4. Arrangements for emergency eye care; 5. Proper use of illumination and color; and 6. Group and individual education in eye health and safety.

WILFUL MISCONDUCT—Assault

An oil well driller was properly awarded compensation for injuries sustained when he was struck in the head with a hammer wielded by a fellow employee. The evidence was sufficient to sustain the finding that the fellow employee was the aggressor. The evidence disclosed that the injured employee upon his arrival for work found that his fellow employee was using his overalls and he threatened to take his knife and cut the overalls off the fellow employee. It was shown that the injured employee had started down the stairs when he was followed by his fellow employee and struck down with the hammer. The court ruled that the injured employee made a bona fide retirement from the affray following his initial aggression, whereupon, the fellow employee maddened by the humiliation pursued and sought to kill the claimant, inflicting grave injuries upon the latter. Affirmed.

Landry vs. Gilger Drilling Company; Louisiana Court of Appeal, First Circuit, February 4, 1957.

CAUSAL CONNECTION—Acid Fumes and Respiratory Ailment

An employee who used nitric acid, sulphuric acid, hydrochloric acid, and cyanide to polish metals in the course of his work was awarded compensation after he complained of difficulty in breathing and dizzy spells, and was found to be suffering from a nasal and pulmonary

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MEMBER . . . . . .
Master Superior Court, New Jersey American Bar Ass'n, New Jersey Bar Ass'n, Chairman, Committee on Workmen's Compensation, New Jersey Bar Ass'n National Federation Insurance Counsel Past Commander, American Legion, Post 10, ... Newark, N. J.

involvement. The employer contended that medical testimony showing that the employee's condition was causally related to his employment was based on conjecture and speculation. The court held, however, that the board need not find that the employee had a pre-existing disease or was suffering from a congenital defect in order to establish causal connection. Inhalation of acid fumes is an occupational hazard and the fact that one employee might be more affected by it than another does not destroy this conception. Affirmed.

Ciampa vs. Tripp Plating Co.; New York Supreme Court, Appellate Division, Third Judicial District, No. 338–19, December 20, 1956.

INJURED ON EMPLOYER'S PREMISES—Subsequent Death by Cerebral Hemorrhage—Causal Connection

An employee received an injury by falling down stairs on the premises where he was employed. He un-

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derwent an operation for a hernia as a result of the fall. The doctor who attended the employee testified that the patient had not complained to him of any symptoms of cerebral hemorrhage. However, there was evidence that the employee had complained of such symptoms to other persons in the hospital, and after being released the patient died of a cerebral hemorrhage. The medical testimony authorized a finding that the hernia and operation may have contributed to the subsequent hemorrhage, or that the hemorrhage was a direct result of the trauma produced by the fall. Therefore, the court held that compensation had been properly awarded since the evidence authorized the finding that the employee's death was caused or contributed to by an accident in the course of and arising out of his employment. Affirmed.

United States Fidelity & Guaranty Co. vs. Holland; Georgia Court of Appeals, No. 36, 314, January 25, 1957.

How Not to Be Ground to a Pulp

"Doors of pocket grinders shall be so arranged as to keep them from closing accidentally"—is one of the 225 requirements of a new American Standard for the safe operation of pulp and paper mills. The document, labeled "Pl. 1–1956, American Safety Standard for Pulp and Paper Mills," outlines measures to protect employees and property for the trek of wood from freight car to the finished pulp or paper.

Employee Protection

Protection for workers includes safety regulations for guards, protective clothing, floors and platforms, lockouts and power trucks. Whenever possible, the code says, all dust fumes and gases incident to handling materials shall be controlled at the source. Where not possible, respirators shall be provided for workers handling alum, clay, soda ash, lime, bleach powder, sulfur, caustic soda, chlorine and similar materials. When handling liquid acid or alkali, workmen must be given approved eye and face protection, rubber gloves and protective equipment.

And knocking down wood from the woodpile must be done by special mechanical equipment—not by hand—says a section of the American Standard. And only authorized men shall be allowed to dynamite the woodpile (!!!).

A safe guillotine?—If made and used according to the safety standard's three provisions, there is no danger from the guillotine type cutter: (1) Each guillotine-type cutter shall be equipped with a control which requires the operator and his helper, if any, to use both hands. (2) Each cutter shall be equipped with a nonrepeat device. (3) Carriers shall be provided for transportation of knives.

Several chapters of the code are devoted to the preparation of pulp wood, including the saws, hand and machine barking, splitters and chippers. In the beater room section, safety requirements cover beaters and washers and the newer type machines.

Interests Represented

The committee which wrote the code was composed of representatives of the pulp and paper industry, trade associations, labor unions, insurance companies, manufacturers of pulp and paper mill machinery and equipment and government units.

In addition to the general committee, several subcommittees were formed. The general committee held several sessions in New York. Assistance was given by the Executive Committee of the Pulp and Paper Section of the National Safety Council. The Section considered the new code at the National Safety Council's 1956 Congress in Chicago and expressed "great satisfaction with the accomplishment of the committee."

Copies of the American Standard for Pulp and Paper Mills, Pl. 1–1956, are now available from the American Standards Association, 70 East 45 Street, New York 17, N. Y., at $1.00 the copy.

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Learning The Hard Way

BANDIED ABOUT

More and more attention is being focused on accidents in those relatively safe (?) precincts—the office. Statistics show that many of these accidents aren't exactly minor either. Case in point: A male office worker left his desk and started down the aisle. He stepped on a piece of paper, but unfortunately there was a rubber band under this particular piece of paper. The rubber band rolled nicely under his foot and the man landed on his spine. He also landed in the hospital where he resided for ten days with two broken vertebrae, and he was in a cast for three weeks. Could this accident have been prevented? Certainly! If oil spots are dangerous on a shop floor, so are rubber bands on an office floor.

BEWARE THE HOT FOOT

Two men were employed in raking hot asphalt. At the end of the day, they found that their feet were badly blistered by the heat of the material. Special shoes with thick wooden soles are designed to prevent this type of injury.

WELDING SPARK AND DIP TANK

That old standby fire starter, the welding spark, is at it again—not that he ever stopped! Although the welding spark started the fire, the large loss resulted from the lack of adequate fire protection for the special hazards involved. What was ignited was the flammable vapors from a dip tank containing an asphalt base paint. There was no ventilation equipment to prevent accumulation of the fumes and neither was there a sprinkler system or automatic extinguishing equipment to protect the tank. When water spray was finally brought to play on the burning paint, the tank, which lacked a trapped overflow drain, became filled with water which spilled the burning paint over the side and across the floor to nearby combustibles. The firemen were forced to leave the building and let the fire burn itself out.

GASOLINE DANGEROUS ANYWHERE

This is an off-the-job incident, but its lesson applies to anyone handling gasoline. A man was building a small trailer in his back yard. Wanting to remove some tar or paint from a piece of angle iron for the trailer's frame, he poured gasoline on the iron, burned it and then scraped it. The iron still

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wasn't clean so he poured more gasoline on it to repeat the process. However, the iron was still hot enough to ignite the gasoline which flared up, setting the gasoline container on fire and burning the man's face and shoulder severely. Gasoline and other flammable liquids should be handled only in special safety cans and should not be used near open flames, sparks or heated surfaces.

PAINT COVERED HAZARD

Oddly enough, this accident involved a safety inspector who was checking a fire escape. The building had been recently remodeled and the fire escape newly painted. Suddenly the metal steps fell out of the risers from the inspector's weight. He was not seriously injured. But apparently no thought had been given to the condition of the metal when the fire escape was repainted. Actually the metal was badly rusted and corroded and the paint only increased the hazard by hiding it.

Eye Safety Programs Urged for Schools

Eye hazards "as great as those in industrial plants" are threatening the vision of hundreds of thousands of youngsters in the nation's schools, according to an official of the National Society for the Prevention of Blindness. James E. O'Neil, the organization's Director of Industrial Service, says there is "urgent need for eye protection programs in vocational and industrial arts shop classrooms, and in chemistry laboratories. He recommended to delegates attending the "school session" of the recent Greater New York Safety Convention that students, teachers and visitors be required to wear safety eyewear "throughout their stay in school shops and chemistry labs."

Charging that "far too few schools have instituted adequate eye safety programs," O'Neil attributed their "inaction" to the "erroneous impression that lack of production pressure lessens the need for personal protective equipment." Evidence to the contrary he added, continues to mount:

"A high school student in Hastings-on-Hudson, N. Y., saved his sight when a lead-pot explosion coated his safety glasses with molten metal," he said. In Milton, Pa., he added, "another student was saved from serious eye injury when his eye protector deflected a flying metal fragment."

O'Neil lauded the New York City vocational school system for its recent inauguration of eye protection programs for its thousands of machine shop vocational students. This program, he said, "got underway with an $8,000 expenditure for safety glasses, but only after a vocational student was awarded $43,000 for loss of an eye in a school shop accident."

Where eye protection programs have been lacking, O'Neil declared, results have often been similarly tragic. In Atlantic City, N. J., he said, a high school freshman suffered loss of one eye and serious injury to the other following an explosion in a chemistry lab. In

(Continued on page 55)

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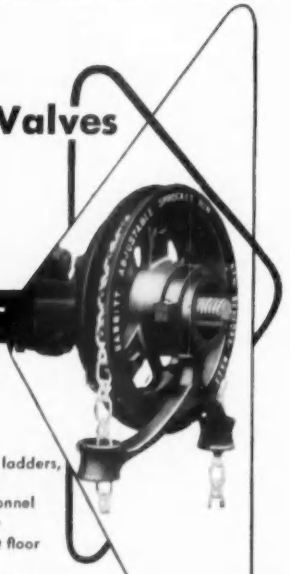

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industrial hygiene

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Revised Data Sheets

The publication of revised safety data sheets on trichloroethylene (SD-14), ethyl ether (SD-29), and phthalic anhydride (commercial) (SD-61) has been announced by the Manufacturing Chemists' Association, Inc.

The data sheets give properties and essential information for the safe handling and use of these chemicals.

Copies of the three revised data sheets may be obtained from the Manufacturing Chemists' Association, Inc., 1625 Eye Street, Northwest, Washington 6, D. C., at 30 cents each.

Hygienic Guide Series

Continuing their aid to industry in preserving the health of its employees, the American Industrial Hygiene Association has added five more subjects to their series of Hygienic Guides. The additions, published in the American Industrial Hygiene Association Quarterly, are on carbon disulfide, ethylene dichloride, hydrazine, methylene dichloride, and nickel carbonyl.

Each Hygienic Guide is devoted to one material. It contains the latest available information on potential hazards, maximum allowable concentration to which employees may be safely exposed over long periods, and engineering and medical methods of control. Major uses in industry and references to technical literature on the subject are also given.

The subjects of previously released Guides include acetaldehyde, amyl acetate, anhydrous ammonia, aniline, arsine, benzol, beryllium, butyl alcohol, cadmium, carbon monoxide, carbon tetrachloride, chromic acid, ethyl alcohol, fluoride-bearing dusts and fumes, fluorine, formaldehyde, hydrogen cyanide, hydrogen fluoride, hydrogen sulfide, mercury, nitrogen dioxide, sulfur dioxide, 1,1,1-trichloethane (methyl chloroform), and zinc oxide.

Copies of the Guides are available from the American Industrial Hygiene Association, 14125 Prevost, Detroit 27, Michigan, at 25 cents each. Remittance must accompany orders for $2.00 or less. A discount of 20% is allowed on orders for five or more with 40% allowed on orders for 100 or more. Each Guide is a single sheet. Loose leaf binders are available at $1.25 each for permanent filing.

Safety Data Sheet on Antimony Trichloride

The publication of a new safety data sheet on antimony trichloride (SD-66) has been announced by the Manufacturing Chemists' Association, Inc. The twelve-page booklet, part of a continuing series of safety data sheets, gives properties and essential information for the safe handling and storage of antimony trichloride, including material on shipping containers, storage, waste disposal, medical management and employee safety.

Copies of Chemical Safety Data Sheet SD-66, Antimony Trichloride, may be obtained from the Manufacturing Chemists' Association, Inc., 1624 Eye Street, Northwest, Washington 6, D. C., at 30 cents.

putting radioactive

A few months ago, a new, fully equipped radiation laboratory was opened by the Goodyear Tire and Rubber Company in Akron, Ohio.

As an addition to the company's main research facilities, the new lab is especially designed for the exploration and development of rubber products which will perform satisfactorily in a radiation environment, said Dr. R. P. Dinsmore, vice president in charge of research and development. Radioactive cobalt 60, which gives off high energy x-rays or gamma rays, will be utilized in this wide, new field of rubber research.

One of the more important projects contemplated is development of radiation-resistant airplane tires which could be used on atomic powered aircraft of the future.

Rubber is particularly susceptible to radiation and excessive doses are invariably damaging, usually leading to hardening and embrittlement. Using radioactive cobalt, scientists will search for the most favorable compounding practices and for chemical additives to improve radiation resistance, along with resistance to heat and oils.

Other goals of the irradiation program will seek to initiate chemical reactions, polymerization and vulcanization of rubber and to improve physical properties of plastics and resins.

For most types of raw rubber, irradiation results in vulcanization. Among the many possibilities in this field is that vulcanization can be accomplished without adding sulphur or other chemicals. Neither is it necessary to raise the temperature of the rubber.

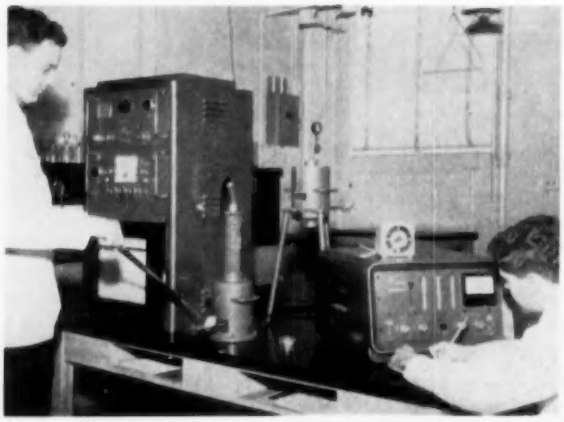
Choice of cobalt 60 as a radiation source for Goodyear's new laboratory was made largely because a wide variety of materials will be investigated. The radiation field can be made quite effective over large samples such as automobile, truck and airplane tires with cobalt 60 and it provides a flexibility which is especially desirable as a laboratory tool.

The cobalt 60 is in the form of small "slugs" or cylinders one inch long and one-eighth inch in diameter. Each cylinder is sheathed in aluminum, one-sixteenth of an inch in thickness. Nine of these cylinders are assembled in an aluminum pencil about 10 inches long and Goodyear's source consists of 72 of the pencils.

Cobalt is a comparatively rare, hard metal closely associated with iron and nickel and when subjected to neutron bombardment in an atomic reactor, becomes highly radioactive, giving off intense radiation of its own. Goodyear's source of 2,100 curies of cobalt 60 was activated in the NRX reactor at Chalk River, Ontario, by Atomic Energy of Canada, Ltd. It was shipped by truck to Akron in a specially designed lead container weighing four tons.

The modern, air-conditioned laboratory built for the radiation research program is a ground floor structure, 42 by 24 feet. Inside the lab is a heavily shielded area, known as the "cave," for housing the radioactive source. Next to it is a well-equipped physics and chemistry laboratory for the preparation of materials and test specimens and for the evaluation of results and products of irradiation experiments.

Access to the "cave" from the preparation lab is gained through a labyrinth with four-foot wide aisles, a design which eliminates the need for any massive, cumbersome shielding door. Walls of the "cave" are made of reinforced concrete, four feet thick and the



Research physicist puts radioactive material (white disk) in detector. Machine is used to measure gamma ray spectrum.

The "hood" in this radiation laboratory affords researchers protection. Specially designed system takes the fumes out.

cobalt 60 to work

Glowing radioactive cobalt 60, safely shielded under water, is checked by scientist for radiation traces. Container houses cobalt when it is raised.

roof is three feet thick. This shielding is adequate for an anticipated 10,000 curie source of cobalt 60 or about a million curies of the fission by-product, cesium 137, which also can be used in irradiation experiments. There are no radioactive wastes resulting from the use of cobalt 60, and with the shielding employed, there is no possibility of stray radiation affecting any of the surrounding area.

Extensive planning and preparation were made for the handling of radioactive materials. For instance, the cobalt 60 rests in the "cave" in a concrete and aluminum lined well, three by six feet and 17 feet deep, providing enough water shield for safe operation.

Another distinctive feature of the installation is the elevator in the well by which means the radioactive source can be raised into an aluminum housing atop

Observer looks through radiation-resistant window while he operates winch raising cobalt. Radiation intensity is tested.

After radiation source is raised from well and encased in aluminum housing it is ready for radiation experiments.

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the well for experiments or lowered to the bottom for storage. With the source under water, scientists can safely enter the cave any time. Direct exposure to the cobalt for as little as three to five minutes would be fatal.

Samples to be irradiated can be placed in the center of the housing for more intense radiation, or throughout the cave around the housing. This arrangement removes practically all limits on the size and number of samples which can be subjected to radiation at one time.

This method also differs from the usual procedures of using radioactive materials (with remote controls) in air in the limited confines of a lead container, or under water. An installation with remote manipulation is complicated and underwater operation is inconvenient as samples to be irradiated must be packaged in water tight containers. Furthermore, full effects of radiation cannot be obtained over large volumes under water because of its shielding characteristics.

As the nation's atomic energy program advances and industrial uses of atomic energy are put into effect, the demand rises for rubber products such as hose, belting, gaskets and tires which will perform satisfactorily in a radiation environment.

Can Serve as Alternative

In chemical processing, radiation can serve as an alternative to heat and chemical agents for energizing or activating molecules and can increase the speed of many chemical reactions. In some cases, it may alter the course of a reaction favorably and yield completely new products.

Use of radioactive materials may open up a wide new field of polymerization research in which radiation should be able to do useful things which cannot be accomplished by the usual chemical means.

One possibility is the formation of new types of synthetic rubber. Through radiation, it may be possible to add monomers to a polymer already formed, endowing a rubber with selective, advantageous properties such as resistance to certain types of solvents or low permeability to various gases.

Another possibility is that the monomer might be selected to act as a lubricant in the rubber, resulting in less internal friction and low heat generation from flexing. Radiation cured rubber has excellent aging characteristics or improved resistance to deteriorating effects of heat and oxygen.

The promising field of food pasteurization by radiation is significant for plastic packaging materials, as well as for rubber mechanical goods used in food processing and packaging equipment. Proper doses of radiation on plastics can result in improved physical properties, especially for high temperature applications. Other applications will be sought in connection with the many plastic materials produced and used by Goodyear.

Effects of radiation on latex, rubber cements and adhesives used in the rubber industry are practically unexplored and offer many avenues of new product development and improvement.

Pictures by courtesy of Goodyear Tire & Rubber Co.

FLAMMABLE SOLVENTS . . . in the First Aid Room

by **EARL R. WALLACE**
Senior Safety Engineer
Eastman Kodak Co.
Rochester, N. Y.

What are the hazards of flammable solvents in relation to the industrial nurse? In order for us to set limitations on the subject, we must present a few definitions. First, a "Solvent" is that component, usually liquid, present in excess in a solution. Second, "Flammable." A substance capable of being easily set on fire. Third, "Flash Point." The flash point of a flammable liquid is the lowest temperature at which it gives off enough vapors to form a flammable or ignitable mixture with air near the surface of the liquid or within the container used.

With these definitions in mind, let's review certain flammable solvents commonly found in the industrial medical dispensary and having low flash points. See Table 1.

Besides these flammable solvents there are some non-flammable ones which are hazardous from a toxic standpoint. Most common among them are carbon-tetrachloride and chloroform, either of which can cause serious difficulty. The list presented should not be interpreted as a complete listing of all hazardous materials which may be found.

Majority Are Highly Volatile

Flammable liquids are peculiar in that practically all have vapors which are heavier than air. Most of them are highly volatile. Because of this, any open container of flammable liquid can be a serious hazard for vapors, volatilized, will flow downward to the floor and will travel until they are dispersed and are no longer hazardous. **Or, until they reach a source of ignition.** Should they reach a source of ignition, the flames will propagate backward to the source of supply. The resulting explosion could be devastating.

There are many sources of ignition, from the common match, the flint and steel, the light bulb, contact plates on switches, the armatures on motors and many, many others, any of which can ignite the vapors of flammable solvents if the proper mixture of air and vapors is present. One additional source of ignition many of us fail to consider is that of the static spark. Static electricity can be generated in many ways, the rubbing of two materials together, the removal of one material from another, the pouring of liquid through the air into another container, can all cause static sparks. Static sparks present a potential source of

Table 1: Common Solvents with Low Flash Points

Acetone	**15°F.**
Naphtha	**20°F.**
Alcohol	**55°F.**
Acetic acid	**104°F.**
Ethyl ether	**–20°F.**
Petroleum ether	**–50°F.**
Ethyl chloride	**–58°F.**

ignition difficult to determine and yet extremely hazardous. Therefore, in all uses of flammable solvents, extreme care should be exercised to provide adequate grounding, to abide by the standards as set up by the National Fire Protection Association or the insurance companies, and to use good judgement in the use of flammable solvents generally.

Toxicity Problems

We have not yet touched on the other side of the problem which is the toxicity of flammable liquids. Most of the organic materials in use in industry today could be considered toxic in varying degrees. Even though people are familiar with the fact that chloroform, ether, and carbontetrachloride are extremely toxic, many of us, by familiarity with them, may lose sight of this fact. The unauthorized use of these materials in any area, and particularly in medical dispensaries where adequate ventilation may not be provided, is extremely dangerous.

There are other solvents in common use which are toxic also. Because the emphasis of this paper is not on toxicity, we will say only that all solvent materials in use in a dispensary should be checked and proper standards for handling should be set up.

A third hazard concerning flammable liquids is that of their defatting action on the skin. Most of the solvents discussed fall into the classification of defatting compounds. It is recommended not only that caution should be used in the handling of these materials to prevent contact with them, but also that adequate washing facilities be provided throughout the entire plant.

In conclusion it might be emphasized that there are many flammable solvent materials in use by the industrial nurse. Among these are acetone, naptha, alcohol, acetic acid, ethyl ether, petroleum ether, ethyl chloride. Flammable liquids are peculiar in the fact that they are readily volatized, easily ignited, and explosive generally by nature. Sources of ignition included are matches, cigarettes, and the like, together with the electrical spark, mechanical sparks, and last but not least, static sparks. Other problems in the handling of solvents include toxicity and dermatitis.

From an address given at the 44th National Safety Congress. Picture by courtesy of U.S. Dept. of Labor.

Oil Men to Discuss Air Pollution

Air pollution and motor fuels are two of the many subjects that will occupy the attention of oil processors at the semiannual meeting of the Division of Refining of the American Petroleum Institute. The four day meeting will be held May 13–16 at the Sheraton Hotel in Philadelphia. W. E. Scott of The Franklin Institute will report the latest findings of the research program being conducted for the petroleum industry. Other technical sessions at the conference will cover discussions of corrosion, electrical equipment, analytical research, training, the handling of kerosene, instrumentation, isomerization, and reforming. Both evening and daytime sessions will be held.

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Driver Fatigue Film

How accident-producing driver fatigue can be relieved scientifically is the subject of a full-color sound film, "Gentlemen Be Seated," now being released for showings to audiences of drivers, truckers, automotive manufacturers and dealers, and other groups interested in problems of highway safety.

The 13½-minute, 16 mm film is sponsored by the Bostrom Manufacturing Company in cooperation with the National Truck Drivers Association. It is now available free, as a public service. Groups wishing to obtain the film should contact Modern Talking Picture Service, 3 East 54th Street, New York City. The film is distributed through exchanges in Atlanta, Georgia; Chicago, Illinois; Dallas, Texas; Los Angeles, California; and New York, New York.

The film, produced by Fenton McHugh Productions, documents the hazards of driver fatigue and shows how this danger can be eliminated through the use of scientifically designed truck seating equipment. Actual on-the-road driver conditions, as well as laboratory sequences, demonstrate the importance of protecting drivers from damaging road shock and vibration.

Eye Safety Program Used for Schools

(from page 48)

Texas, a college coed was killed when a glass fragment—which would have been stopped by a $2.00 pair of safety eyewear—pierced her brain through the eye.

In addition, he declared, "students who ordinarily wear eye glasses have an even greater need for safety eyewear. In most instances it is safer for a student to have no eye protection at all than to wear ordinary glass lenses in a school shop or lab."

The uses of safety goggles, O'Neil said, extend far beyond the classroom and chemistry laboratory. "They should be standard equipment for every normally active youngster who wears eyeglasses. Safety lenses will enable these children to participate in many activities—including sports—from which fear of shattered glasses might ordinarily bar them."

The prevention of blindness leader called on educators to "follow the examples set by the more progressive industries which have saved the vision of thousands of employees through intelligent eye safety measures."

Follow Good Example

O'Neil added: "Industry has a sizeable stake in having students receive proper safety training, and should be called on for assistance in establishing school eye safety programs. However, firms with substandard safety programs should be avoided when help is being sought, because there is little to be gained from imitating a bad example."

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(Use Key # D-28 on Inquiry Card on page 73)

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(Use Key # D-29 on Inquiry Card on page 73)

A suburban lighting company supply truck, a telephone company repair truck, a United Parcel service delivery truck and the passenger car of a dairy cooperative executive are among the safest automobiles in the New York metropolitan area.

These types are among the nine top award winners announced in the Greater New York Safety Council's 21st annual Inter-Fleet Accident Reduction Contest. A total of 446 fleets, operating 29,228 commercial vehicles, matched their safety performances throughout the past year. They competed in 59 classifications, according to size of fleet, type of operation, and whether city or suburban. The competition included 4,501 buses, 897 company-passenger cars, and all the other vehicles were trucks.

An outstanding record among the nine grand prize winners was compiled by the Catskill-Croton Eastern District of New York City's Department of Water Supply, Gas and Electricity, whose vehicles covered 472,321 miles during the year with only one accident. This municipal agency won top honors in the "Class Two, Suburban Miles" division. Some groups competed on the basis of miles, others on the basis of hours of vehicle operation.

Honors for the greatest number of hours of operation between accidents went to the Weissglass Gold Seal Dairy Corporation, of Staten Island, which had two accidents in 267,460 hours of operation, giving it a per accident average of 133,730 hours of vehicular operation. The dairy firm topped the "Class One, Suburban Hours" division.

Other grand award winners were: Sealtest Sheffield Farms, Wholesale Department, Manhattan (three accidents in 551,475 miles); New York Telephone Company, Prospect District, Brooklyn (three accidents in 115,693 hours); Long Island Lighting Company, Hicksville, L. I. (one accident in 423,968 miles); United Parcel Service, Flushing, Queens, unit (one accident in 263,330 miles); Chas. Pfizer & Company, Inc., Brooklyn (two accidents in 44,310 hours); Pioneer Ice Cream Division, The Borden Company, Peekskill, N. Y. (one accident in 37,061 hours); Dairymen's League Cooperative Association (ten accidents in 4,450,019 miles).

Included among the group winners, although not winners of grand awards, are fourteen fleets that went through the contest without accident. Their operations, however, totaled fewer hours or less milage than the accident-free intervals of the major winners. Ten special awards were distributed among five bus companies for marked improvement in their safety performance last year.

• • •

Two million man-hours of work without a lost-time injury is the record completed recently by employees of the J. A. Jones Construction Co., construction and maintenance contractor to General Electric Co. at the Hanford plutonium plant.

Much of the work done by the Jones company and sub-contractors, Urban Engineering Co., Industrial Electric Co. and the V. S. Jenkins Co., has been carried out in radiation zones of the sprawling atomic project.

The contractor and sub-contractors have had an average of about 700 employees since the last on-the-

occurred on Nov. 15, . Gardner, manager of ction operation, and L. olds, general manager es Co., are given much lit for the accomplish- ıse of their continuous ı the safety program.

• • •

orld's safety record for ts was set in March by rand Corporation's big ıfacturing plant at Pen- ɔrida. Plant Manager onemeyer said that the 4,800 nylon plant em- ped the previous record 0 man-hours without a njury. The previous set in 1952 by the Forst- ɛn Mills of Passaic, New

ɛmstrand nylon plant record-breaking safety 25, 1955. Since start- ɔns in late 1953 plant have chalked up two ls of more than two and ɔn man-hours without a ury.

• • •

rs working for the U. S. s of Engineers in the ver Division achieved a safety performance in not a single employee reported on projects 53,000,000, Major Gen- tschner, Chief of Engi- nnounced.

s of Engineers reported Missouri River basin oyees of contractors nine states worked 16- lity-free man hours on rhouses, air bases, ar- r improvements and , all rated as high haz- erwriters.

mendable achievement the result of whole- peration in the safety he Corps of Engineers, ıtractors and employees ıstly proud," General l. "This record proves ction fatalities can be the will is there."

Safety Convention

(from page 35)

ger of the general insurance division of the New York Life Insurance Company, pointed out that operations within commercial buildings are more varied than those found in a strictly industrial form of business.

"Our mammoth buildings today are cities within themselves," he said, "and they must be so administered, policed and inspected, as to insure safe passage for all who enter, and safe conditions for all who work there.

"Safety today is the concern of labor, management and, more recently, government," he said. "In the past, the government has been occupied solely with enforcing and regulating safety codes. Recently, there has been a change in the State's program and now it feels it necessary to enter, with labor and management, the field of accident prevention."

Accidents Start Outside the Shop: Most industrial accidents have their real origins outside the shop, the annual convention was told. The convention's "safety swap shop" session heard that 88 percent of industrial accidents were caused by what is commonly termed "carelessness" of the worker.

The statistic was presented by Jack L. Walker, director of human relations of the S. W. Farber Inc., of New York City. Mr Walker suggested that a better understanding of what has been termed "carelessness" might bring a new approach to accident prevention in many plants.

"We found that forgetfulness, rather than disinterest in safety, was the major cause of accidents. Obviously a man preoccupied with personal problems and emotional disturbances is more apt to forget to use caution and care essential to safety than one who has no emotional or other disturbing worry.

"Low morale, worry about persons and things not necessarily connected with the immediate job on hand play an important part in the causes of accidents. Of course, improper supervision and overly critical foremen who ridicule their men publicly can frequently bring about a state of emotion conducive

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(Use Key # D-30 on Inquiry Card on page 73)

to the kind of carelessness that results in accidents.

Mr. Walker said that his company had instituted a safety program based on "conditioning of manpower." He declared:

"By 'conditioning' we do not intend to exclude training but to incorporate the handling of the 'whole' man which involves his emotional as well as his mental and physical being. It assumes that a person brings with him all of his problems, emotional conflict, and happy or unhappy state of mind.

"It is our considered opinion that the application of sound human relations from the top brass to the man of the line is the first step towards an accident-free plant.

"The techniques used can be compared to the sale approach to a customer. An employer who does as much to satisfy his 'job customer' as he does to satisfy his 'product customer' is on the right road to completing sound morale. The details of this technique, if properly applied, will not only reduce the accident rate but pay off in terms of loyalty, dividends that can never be fully measured in dollars and cents. A sound human relations program is the best psychological approach to safety."

Mr. Walker said a good human relations program entailed the following for employees: full appreciation for a job well done, made to feel 'a member of the team,' job security, good wages, opportunities for promotion, participation in a complete recreational program, good working conditions; complete health, accident, hospital and life insurance and pensions without cost, and to get every assistance for doing the job safely with a minimum of nervous tension."

Damage Control at Sea: The age of guided missiles puts on civilian ship operators a new responsibility of having crews trained in damage control and emergency measures. Captain J. B. Icenhower, Commanding Officer of the Naval Damage Control Center at the Philadelphia Naval Base, suggested that merchant ship operators avail themselves of damage control training made available by the Maritime Commission and M.S.T.S. He said, "Navy facilities, in so far as training in firefighting is concerned, are also available to ship operators. It is gratifying to realize that many companies are taking advantage of the training offered by the Navy."

Capt. Icenhower added: "Among the more important subjects studied by an embryo damage controlman is ABC Warfare. There is no reason to suspect that a knowledge of the fundamentals of these subjects will be less important to civilian ship operators. A guided missile, at the beginning of its glide to the target, is a notoriously poor discriminator of occupation."

Capt. Icenhower said: "Seaborne carriers of flammable cargoes represents a type ship where damage control faces its greatest challenge. While problems of stability, righting movement and metacentric height of a tanker are common to most ships, the potential hazard of the flammable cargo is one requiring immediate, intelligent action if the ship is to be saved."

How About a Home Safety Committee? Every family should set up its own home safety committee, an industrial safety expert told the convention. Lest the idea might sound silly, Frank J. Conroy told how it was put into effect six years ago in Niagara Falls under the guidance of the Electro Metallurgical Company, of which he is director of safety. The plan, which began in 330 homes, now has 6,000 family safety committees in ten communities scattered across the country where there are plants of the Union Carbide and Carbon Corporation, of which Electro Metallurgical is a division.

The formation of family committees was encouraged among employees by awarding certificates and monthly mailings of safety letters. Families were encouraged also to make the home inspection for accident hazards, sponsored annually by safety councils in many parts of the country with the aid of school authorities.

The program was later extended. For instance, the Niagara Falls plant rented neighborhood theaters in three sections of the city on a Saturday morning and gave free passes to employees and their families for a program of entertainment and safety films. As the theaters let out, thousands of children walked about the city with balloons they had received as gifts. The balloons bore safety slogans.

At another time the company erected three large tents on the lawn outside the plant and, with the aid of the police department traffic unit, staged a traffic safety exhibit. This was just before the Labor Day week-end, and featured wrecked cars, free driver tests, a safety-quiz machine, and displays of different kinds of traffic signals. All the home safety committees were invited.

Stressing the need for increased participation in home safety, Mr. Conroy said, "If in a single year, some catastrophe were to wipe out Dearborn, Mich. (pop. 95,000), Madison, Wisc. (pop. 96,000), or Niagara Falls, N. Y. (pop. 91,000), the average person would not regard it as nonchalantly as he does the 95,000 accidental deaths."

Industry Loses from Home Accidents: Accidents that take place at home are causing a greater loss of production in industry than on-the-job mishaps.

As a result, industrial management is taking an increasing role in promoting home safety through educational programs on the job, it was reported by Lucille C. Sassmann, women's safety staff assistant of the American Telephone and Telegraph Company.

She said the telephone company had found that "we women are having about twenty times as many lost-time accidents off the job as on the job." Of the off-duty lost-time accidents, 60 percent occurred in the home or home environment, she said.

"Twenty-nine thousand people are killed each year in home accidents" she said. "Of these, more than 14,000 die from falls in the home and another 5,000 die from burns. This is not the whole story by a long shot for way over four million are injured in home accidents each year."

Aviation Fire Safety: Ten areas in which aircraft manufacturers, airlines and airport management

can reduce five hazards were outlined by Milton M. Fischer, fire chief for Mitchell Air Force Base, L. I. He listed safety advances already made in the industry, and declared:

"But more progress is essential, particularly in the following areas:

1. Greater attention to fire safety in the aircraft design field, particularly with regard to the crashworthiness of aircraft.

2. Greater efforts to put into service the principles established by research of the N.A.C.A. and C.A.A. in crash-impact fire prevention.

3. Greater interest in selecting high flash point fuels for aircraft power plants and nonflammable fluids for hydraulic systems.

4. Further research into the safe handling of flammable fuels looking towards methods designed to control fuel vapor release during fuel transfer and safeguarding the vapor space in tanks while in flight and on the ground.

5. Foster effort to encourage the provision of truly adequate airport-based aircraft rescue and firefighting equipment and trained personnel.

6. Further research into some of the pressing fire problems involved in aircraft operations—that is, more effective fire barriers within aircraft structures, protection of fuel tanks against the lightning hazard, improved means of airborne fire detection and extinguishment, additional research on static, etc.

7. Greater research into some of the associated fire problems—crash fire fighting, underground fuel servicing facilities, hazardous cargo handling, aircraft hangar protection, aircraft maintenance fire hazard, etc.

8. More active efforts to secure proper airport approach zoning and the elimination of airport hazards responsible for many accidents resulting in fires.

9. More recognition of the importance of fire in planning for the jet age of tomorrow—particularly with regard to facilities to expedite emergency escape from crashed aircraft.

10. Establishing through industry cooperation an N.F.P.A. aviation field service engineer to sponsor and encourage fire safety throughout the industry as is being done now in the petroleum, gas and electrical industries."

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(For details, use Key # D-31 on Inquiry Card on page 72)

Tomorrow's Aircraft on Yesterday's Airfields: An aviation safety expert took the nation's airlines and airport designers and operators to task for insufficient imagination. Ralph Dee declared that failure of both airlines and airport management to foresee the growth of aircraft size and business has "resulted in operating in very confined quarters." Mr. Dee is ground safety engineer for United Air Lines at Stapleton Field, Denver, Colo. He was formerly the line's safety representative for the Eastern Region.

In a discussion of ground equipment at airports, Mr. Dee said: "The safety aspect has been forgotten in a number of instances by the manufacturer as well as the company. An example of this is the

passenger loading stands which are costing the airlines thousands of dollars a year in passenger injury claims."

He said the design of one stand was being revised, at a cost of $900 for each unit, to make it safer.

Mechanized Handling Necessary: With expanding industry in a new era of faster production and distribution of goods in greater volume than ever before, it becomes evident that soon industry will find it impractical, if not impossible, to operate without mechanized handling equipment, according to Clyde R. Dean, general sales manager of Yale Materials Handling Division of The Yale & Towne Manufacturing Company.

The signs of this new era are plain, he said, in the demands of progressive management for bold, new methods of handling materials of every type with greater speed, efficiency and cost control. Materials handling methods, he said, form the greatest single production area where dramatic, money saving improvements can be quickly achieved.

"It is doubtful," Dean stated, "if 50 percent of American industry today is handling material in a highly efficient manner. Further, where else can management attack its problems in a field which promises the immediate benefits of a 15 percent reduction in inventory, 30 percent saving in storage and over-all labor, materials, supplies and transportation?"

Injecting a long-range international note, the speaker said, the failure of America to constantly seek to achieve more efficient production procedures may well cost us our world industrial leadership. A recent Columbia University study, he explained, showed that although still below that of the U. S., Soviet Russia's output per man hour is currently increasing at a rate twice ours.

Dean pointed up 10 typical areas of operation which an individual plant executive can examine as a start to determine where costs may be cut by the implementation of mechanized handling equipment.

Typical were: material handled in small units, material rehandled many times, idle production machinery and wasted overhead space.

His conclusion was a summary of specific benefits which can be immediately derived from the use of such equipment, e.g., better utilization of manpower, better interdepartmental cooperation, reduced process time and better housekeeping.

Radiation Enters Industry: A great increase in the industrial use of radioactive materials has made it of vital importance that industry cooperate to the fullest extent with government in writing and observing radiation protective codes. William A. McAdams, General Electric Company consultant on radiation protection, addressed the industrial health session. He said that more than 1,100 industrial firms were now using, in more than 1,500 locations throughout the United States, radioactive materials supplied by the Atomic Energy Commission.

"In addition," said Mr. McAdams, "there are thousands of organizations using X-ray equipment, particle accelerators and radioisotopes outside the control of the A.E.C. In view of the large scale reactor development program now being undertaken, it is evident that more radioactive materials will be available for use by industry and that many new applications will be developed in the years to come.

"It is highly important that all industries using radiation and radioactive materials appreciate fully the hazards involved and develop standards which will assure the safety of their employees and the general public. It is likewise important that industry cooperate to the fullest extent with governmental agencies which are administering radiation protection codes now in force or which are in the process of developing such codes."

Nuclear Fire Problems: The U. S. Atomic Energy Commission is going to make available some of its know-how to make it easier for local fire departments in various parts of the country to fight blazes involving materials used in the nuclear energy industry. The announcement was made by Francis L. Brannigan, safety and fire protection engineer of the Atomic Energy Commission. Special training courses will be made available by the Commission. The Commission will not train the firefighters themselves, but will train instructors for city and state schools for firefighters.

Mr. Brannigan, who will give the course, said it would require three days to prepare instructors in the various localities for the courses they will give on the nature and control of nuclear energy fires. Mr. Brannigan said that directors of municipal and state fire schools desiring the special training course should make written request to Daniel F. Hayes, Chief, Safety and Fire Protection Branch, U. S. Atomic Energy Commission, Washington 25, D. C.

He suggested that larger cities getting the course invite attendance from instructors in the fire departments of nearby small communities. The course is offered without charge.

New York and the Atom: New York City's Fire Department takes the sober view that it will be faced in the near future with a fire or other emergency involving radioactive materials—and it is training a specially selected group of firemen to be ready for it. Lieutenant Andrew A. Keil, radiological officer of the Fire Department, said that widespread use of radioactive materials has indicated, on the basis of fire incidence figures of past years, "that these materials in some immediate future will be involved in a fire or emergency situation."

"It is true," he declared, "that there is a hazard associated with the use of radioactive materials, but under normal conditions, safety rules and proper safeguards prevent any over-exposure to radiation. It should be recognized, however, that when the Fire Department enters the scene it is not under normal conditions and these safety rules and safeguards are not applicable or are non-existent."

A selected group of firemen was given special training in the aspects of radiation. Upon completion of this training, these firemen were utilized as instructors to indoctrinate the Fire Department personnel radiological-wise. This indoctrination was started in December, 1955, and will continue indefinitely. Radiation fire-fighting has been made part of the curriculum of the Fire College and the Probationary Fireman School.

In addition to the training, an inspection of every installation

using radioactive materials was made and an evaluation of the hazard associated with the installation determined. This evaluation is the basis upon which all radiological pre-fire planning is accomplished.

Public Fears Unwarranted: The $55 million atomic energy plant of Consolidated Edison Company at Indian Point, New York, will be much safer for its workers than their own homes. The Westchester County plant will begin production of electricity from atomic fuel in 1960.

A. Bryan Marvin, public information officer for Con Edison, addressing the convention's public utilities session, said:

"Consider the basic nature of our products—electricity, gas and steam. Each is lethal in its own way if it is misunderstood or mishandled. We have been successful in business for about 131 years, primarily because we have been able to control these forms of energy and deliver them to homes, offices, and factories in such shape that customers have been willing to accept them.

"Our lost-time accident records show that our employees are four and a half times safer on the job than they are in their own homes.

"Our approach to the use of the atom as a fuel is identical. We are interested in a promising sort of energy which we can use to make electricity. If we did not think the atom could be used safely in this manner, we would not be interested. We want to stay in business, not make headlines.

"If we ever have a thought in the next few years that our atomic plant will not be a completely acceptable member of the community we will not put it into operation."

Disaster Planning: Plant and personnel protection against catastrophe should be worked out under peacetime conditions so that they may, with planned implementation, meet wartime hazards, the catastrophe control session of the Greater New York Safety Council's annual convention was told. The protective program worked out at E. I. du Pont de Nemours & Company, Wilmington, Del., was described by Albert G. Jacobs, manager of the company's defense section. He said such a program had two purposes: to prevent any disaster which could possibly be averted; and to save lives, reduce injuries and control damage if an unavoidable disaster should strike.

The control of damage in a catastrophe, he said, depended on foreseeing every possible emergency, preparing with complete thoroughness to meet every problem that could be anticipated, and having enough flexibility to meet the unexpected.

Every plan should have a protection coordinator whose responsibility is to direct all protection activities prior to, during and after an emergency, he said.

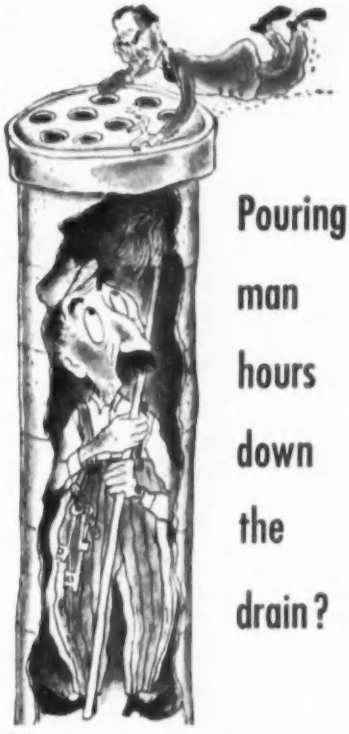
Mobilization Planning Revised: A government spokesman told industry representatives that many of them would have to change their concept of "a national posture of mobilization readiness" if this country is to be prepared for any possible enemy attack. William E. Haines, director of industrial defense of the Business and Defense Services Administration in the Department of Commerce, said that "the whole concept of mobilization planning has undergone many revolutionary changes" since the atom bomb ended World War II. He suggested that some industries had not kept up with the change in concept.

Mr. Haines offered consultative aid of his agency to all industries wishing to conform to the new concept.

"It has become almost a cliche," said Mr. Haines, "to say that this nation's ability to resist and defeat aggression lies in its total capacity to produce. If we believe this to be true, what are we doing to assure continuity of industrial production?

"Industry, as well as government, must assume a posture of readiness. Industry must be prepared to produce under the most severe and austere conditions. Only industry itself can prepare for the continuity of industrial management and production. Failure to take such steps entails dangerous risks.

"So, let's watch our posture. . . . Most producers of end products important to the national defense are inescapably reliant upon a long



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Wasted hours in floor maintenance can clog up your whole profit and loss set-up.

LEGGE provides a waste-proof program of upkeep that accounts for every work hour of every day. What's more, LEGGE Polishes give longer wear per application. Even heavy traffic won't "walk 'em off". And they rarely need the labor-consuming job of stripping. Many buildings report savings of up to *33⅓%* with LEGGE Maintenance.

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(Use Key # D-22 on Inquiry Card on page 73)

chain of suppliers and sub-suppliers. The fact that the products of these suppliers are often not easily distinguishable in the end product makes them no less indispensable to the nation's survival.

"We in BDSA can assist in many ways. We can act as a clearing house of ideas and offer suggestions based upon the sound and practical experience of other companies in many diverse industries. So, let's watch our 'posture'—both industry and government. For, unless we do we may one day wish we had."

Using Radioactive Materials in Hospitals: A personnel problem in the hospital use of radioactive isotopes was reported at the convention. Dr. S. Allan Lough, Deputy Director of Health and Safety Laboratory, U. S. Atomic Energy Commission, said that an increasing number of hospitals was establishing programs for clinical use of radioisotopes which were now in abundant supply.

Declaring that competent radiation physicists and trained technicians were "not too numerous," Dr. Lough said:

"A hospital which contemplates initiation of an isotope program must expect difficulty in finding satisfactory personnel. A few institutions will be fortunate enough to have on the staff a physician with training in the physics and chemistry involved. Such a doctor can train an intelligent, basically educated young man or woman on the job."

The labor market situation has a direct bearing on safety, for departure of a trained employee will result immediately in an almost complete loss of control of radioactive materials. Indeed, safety considerations require that the program be suspended until a suitable replacement is found.

Dr. Lough said disposal of radioactive waste in a medical program was "a minor problem which is easily handled by a trained technician." He said this was because all the radioisotopes commonly used in medicine have short half-lives and decay rapidly. He said: "The medical isotope worker needs to be more concerned with using the shipment before it decays then with disposal of waste."

Hospital Accidents: A safety engineer suggested today that the number of accidents in hospitals could be reduced by better orientation of patients to their new surroundings upon admittance to the hospital. John L. Pickens, engineering research superivsor of the Hartford Accident & Indemnity Company, proposed that all hospitals give to entering patients a pamphlet discussing briefly and sympathetically the rules of the hospital, differences between the hospital bed and those at home, use of bathrooms, fire drills and other matters bearing on patient safety with emphasis on "why it is important to do things in a certain way.

Mr. Pickens reported on an analysis made of 3,348 injury-producing incidents last year in which the victims were not members of hospital staffs. Five percent of the accidents occurred to persons visiting patients. 69 percent resulted from actions of the patients, 13 percent resulted from actions of hospital employees and in 13 percent it "was questionable where to place responsibility."

How Nurses Can Prevent Industrial Accidents: Schools of nursing have not put enough emphasis on communication between nurse and patient, a supervising industrial nurse told the convention. Margaret Sinnott, R.N., B.S., supervising nurse of the Metropolitan Life Insurance Company, said a nurse could, during pre-employment examination and later in the course of periodic health check-ups, detect clues to the applicant's or employee's personality, home problems and traits that would be helpful to management in reducing the accident risk. She said this could be done where the nurse made the examination and also where she merely prepared the person for examination by a doctor.

Miss Sinnott said that in manuals and professional journals "we read again that it is a good industrial nurse's job to listen, but there is 'uh-huh' and 'really?' listening, and listening intelligently."

"The physical examination picks up organic defects and obvious emotional difficulties," she declared, "but these are not the main cause of accidents. I think we all know that most accidents are caused by carelessness, inattention and worry over personal or job problems. This is the border line area where the alert nurse or doctor can pick up valuable information that can be of benefit in preventing accidents. The nurse has a key role here. There are certain things she can watch for and report to the physician."

Make Safety Fashionable: Convince American women that it is fashionable to be safe and you will cut the nation's annual toll of accidental death, injury and property loss. This advice was given by Mrs. Gertrude Frese, assistant to the president of the New York Telephone Company, which has 29,000 women among its 86,000 employees. She reported that the number of women in industry in this country has increased 50 percent in the last ten years while the male work force increased only seven percent.

Mrs. Frese said that some industries failed to provide the "motivation" for safety. Such motivation was especially important for women, she declared, because in addition to their on-the-job performance their attitude towards safety set patterns in the households of America.

"We should make it fashionable to be safe," said Mrs. Frese. "Make it smart not to have an accident, no matter how small. Make people aware of the awful effects of carelessness in the home, on the road, in the plant or office."

Picture by courtesy of Federal Sign and Signal Corp.

THE FIRE FRONT

Standards Needed for Airport Fires

A lack of standards for aircraft rescue and fire fighting equipment at many of the world's airports—including several principal ones—is being paid for with human life, George H. Tryon of the National Fire Protection Association revealed at the Seventh National Conference on Standards in New York City.

Mr. Tryon, assistant technical secretary of the association, said that many efforts have been made to obtain more complete air passenger safety but that the NFPA has not succeeded "in establishing the desired standards of aircraft rescue and fire fighting equipment at even the principal international airports."

Mr. Tryon cited the crash of a Constellation at Kallang Airport in Singapore two years ago when 31 passengers and two crew members were killed.

"Despite the fact that the aircraft sustained a series of impact shocks after landing ten feet short of the runway threshold line, the resulting deaths were fire deaths and not impact deaths, Mr. Tryon reported.

"The inept fire department and would-be rescuers did not have the tools or the knowledge to gain entry into the fuselage. For roughly 13 minutes the fuselage area was free for access by rescue crews, but after this period the wreckage shifted and the fire engulfed the fuselage."

He said that after the Singapore disaster, the United Kingdom established both domestic and colonial criteria for the provision of aircraft rescue and fire fighting equipment to forestall another similar debacle. However, Mr. Tryon revealed that British officials "found themselves in some difficult positions at the international airports not under British Government jurisdiction.

"Obviously, the life safety requirements did not change enroute. What was required at one airport, to assure the safety of the passengers, should likewise be available at every other airport, regardless of who has administrative control over each of the airports utilized."

February Fire Toll

Estimated fire losses in the United States during February amounted to $95,569,000, the National Board of Fire Underwriters has reported. This loss represents an increase of 13.7 percent over losses of $84,041,000 reported for February, 1956, and a decrease of 17.1 percent from losses of $115,272,000 for January (1957).

Losses for the first two months of 1957 now total $210,841,000, an increase of 16.5 percent over the first two months of 1956, when they amounted to $181,013,000. These estimated losses include an allowance for uninsured and unreported losses.

He agreed that strict conformance with NFPA standards would work severe hardships in some situations. "The frequency of flight operations is a definite factor in applying a scale of fire protection for an airport," Mr. Tryon said.

He stated that establishment of the desired international recommendations is in a formative stage but cannot be reported on at this time as an accomplished fact.

Mr. Tryon also pointed out that the U. S. courts have ruled that a city performing its fire protection responsibilities is not subject to legal suit for any acts of omission or commission on the part of its fire fighting force. However, in the operation of an airport, the courts have held that the city is performing a proprietary or corporate function and thus is not immune from suit.

"This fear of legal action has retarded the provision of aircraft rescue and fire fighting equipment for airports," Mr. Tryon declared. "Many cities have felt that the provision of any equipment would indicate recognition that an obligation existed and if the equipment proved inadequate, the city would be subject to suit."

He contended that airport management groups feel if they should assume legal responsibility they would have everything to lose and very little to gain—that is; the equipment and the lives they are seeking to protect will in most cases be the property or responsibility of a third party, the airlines.

"Thus, you can see that while it makes sense that airport management have administrative control of aircraft rescue and fire fighting equipment at airports," Mr. Tryon said, "it would hardly be fair to place upon them also the legal responsibility."

Selection Chart for Fire Extinguishers

A new chart, "How to Select a Fire Extinguisher" is available free of charge from the Fire Equipment Manufacturers' Association, Inc. The chart lists basic types of extinguishers and shows at a glance which to use against the three classes of fire: Class A—wood, paper, rubbish, etc.; Class B—volatile liquids; Class C—electrical fires. The effects of temperature, the operating ranges for each type of extinguisher, how the various extinguishing agents kill fire, and other information on extinguishers are included on the chart.

Copies are available free of charge in quantity from the Fire Equipment Manufacturers' Association, Inc., Suite 759, One Gateway Center, Pittsburgh 22, Pennsylvania.

Safety Code for Carbon Dioxide

This "Safety Code for Inspecting, Recharging and Maintaining Fixed High Pressure Carbon Dioxide Fire Extinguishing Systems" was prepared by and reprinted through the courtesy of the Fire Equipment Manufacturers' Association, Inc.

It is very important that any person who is attempting to make a detailed inspection of a fixed carbon dioxide fire extinguishing system must be thoroughly familiar with all operating details and the functioning of the particular system involved. It is recommended that the manufacturer's instruction book and layout print of the system be readily available for reference during the inspection.

It is strongly recommended that the manufacturer's factory trained representative be employed to do inspection and any necessary repair work in connection with fixed carbon dioxide systems.

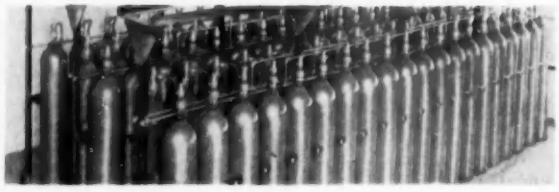
Hydrostatic Pressure Test

After a carbon dioxide cylinder has been in use for five years, it shall be subjected to a hydrostatic pressure test to determine as fully as possible its fitness to withstand recharging for further shipment and use. This requirement covers only cylinders to be recharged. It does not mean that a cylinder must be discharged and tested every five years. This test shall be conducted only by a person or concern who has the proper approved equipment to do so.

The cylinder shall have its discharge divide, or valve, removed and be subjected to a test by internal hydrostatic pressure in a water jacket to determine the expansion of the cylinder. This periodic test must include a visual internal and external examination.

The pressure required shall be 5/3 of the service pressure of the cylinder and shall be applied for at least thirty seconds or as long as it is deemed necessary to obtain complete expansion of the cylinder.

(Continued on page 66)



Inspection and Maintenance

Systems shall be examined at regular intervals, i.e., several time a year, for tampering, mechanical damage and at least once a year for loss of weight. **Before making any tests or removing any cylinders be sure to take all necessary steps to prevent an accidental discharge of gas. When inspection is completed be sure system is left in operation. Follow the manufacturer's instructions.**

In making an inspection of a carbon dioxide fixed system, it is recommended that the following points be checked:

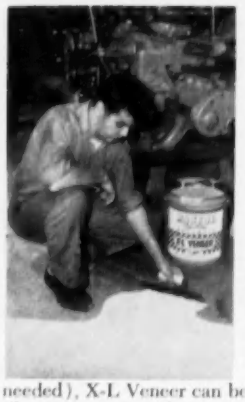
1. **Be certain that there is no material of any kind stored or placed in such a way as to interfere with the functioning of the system.**
2. **Note any undue corrosion of either cylinders or operating equipment piping, or any other part of the system and take the necessary action to correct this.**
3. **Examine all moving parts which are accessible, to be certain that they will work as required, when required.**
4. **Weigh all cylinders and record the weight on the cylinder record card provided. If the charge in any individual cylinder is 10 percent less than normal, it shall be recharged**

Systems

to proper weight. Cylinders which are empty and show no sign of being physically discharged, should be inspected for a ruptured safety disc, leaks in packing, or deterioration of the cylinders. On any cylinder designed for discharge by the cutting of a frangible disc, note the condition of the discs, and if any are partially cut or marked by the cutter, the cylinder shall be recharged after having a new disc installed. Be sure to cover up immediately the weakened frangible disc by installing the recoil adapter furnished for the purpose or the valve protection cover before handling the cylinder.

5. Test the operation of all remote control devices by actually operating them without discharging the system.
6. Test the operation of any automatic system which may be pneumatic (rate-of-rise), electrical (thermostatic or manual), or by means of a fusible link. FOLLOW THE MANUFACTURER'S INSTRUCTIONS.
7. Check all directional valves to see that they operate correctly and are properly set in either the open or closed position as called for in the instructions. Make sure that proper designation nameplates appear on such valves.
8. Examine all nozzle or outlets to see that they conform to the layout drawing as to number, size and position, and that they are not clogged with foreign material or in any way damaged.
9. Make certain any protective devices are intact which are designed to keep nozzles from being clogged up by any extraneous material.
10. Check all pressure operated switches to see that they work properly and that they operate the electrical circuits for which they were intended.
11. Check all operating devices designed to close dampers, windows, or other mechanisms which are entirely mechanical and not dependent on electrical operation. Be certain that, in addition to being properly released to operate, all dampers or other mechanisms do operate every time they are released.
12. Check all instruction plates or designation nameplates to see that they are correct and readable.
13. Check the whole hazard relative to the original installation drawings to make certain that there have been no changes in the hazard which will adversely affect the system as originally installed.
14. In connection with any equipment employing hoses of any type for either manual application or carbon dioxide gas, or for connecting some moving part to the piping arrangement of a fixed system, these hoses should be inspected very carefully and if any deterioration at all is evident they should be hydrostatically tested to at least 1000 psi pressure.
15. Depending upon the local conditions involved, it is desirable to test the system out by actually discharging carbon dioxide through the piping system at intervals of from two to five years. One cylinder for each 10 or fraction thereof should be used for this purpose. FOLLOW THE MANUFACTURER'S INSTRUCTIONS.

new safety topping provides NON-SLIP FLOOR SURFACE



A safety topping for making floors and steps non-slip is announced by The Monroe Company, Inc., Cleveland. Called X-L Veneer, the product contains a new type of abrasive filler and aggregate that is combined with synthetic, heavy bodied plastic base material and special solvents.

Applied on steps, inclines and floors, it forms a thin, tightly-bonded veneer that remains slip-resistant whether wet or dry . . . thus contributing greatly to accident prevention. Easily troweled on, just as it comes from the container (no primer needed), X-L Veneer can be used over concrete, wood, steel, tile or terrazzo surfaces, even over glass. Because it is impervious to oil and grease, it is especially recommended for use around machinery. It is also adaptable for covering steel floor plates. Other features are resistance to gasoline, alcohol, fats and chemicals used in cleaning compounds and insecticides. In addition, X-L Veneer is fire retardant.

Ideal applications include stairways, ramps, catwalks, aisles, shower rooms, lavatories, swimming pools . . . even areas subjected to heavy steel wheel trucking. It is used frequently on boat decks, tread areas of airplane wings, and catwalks and running boards of petroleum transport trucks. 4 attractive colors—red, green, light gray and dark gray.

For full details, request Bulletin C-46-5,

The Monroe Company, Inc.
10703 Quebec Ave., Cleveland 6, Ohio

(For details, use Key # D-33 on card on page 73)

PLACE HEAD-BAND WELL UP AROUND HEAD TO KEEP FROM SLIP-PING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO HOLD PAD AGAINST THE NOSTRILS
PRESS EDGES OF FACE PLATE DOWN TO FIT FACE SNUGLY

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PROTECTIVE MASKS

These light-weight aluminum masks provide protection against over 400 dusts such as wood, coal, lime, salt, cement, grain, rust, paper, textiles, some insecticides, paint spray from non-toxic paints, etc. Pads can be changed in a few seconds. Only clean gauze touches skin. Comfortable to wear. Workers like them.

Martindale Protective Masks	$.30 each
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(For details, use Key # D-34 on card on page 73)

Cylinders which are hydrostatically tested and are found to have a permanent expansion in excess of 10 percent of the total expansion and/or one or all of the following defects appear shall be condemned.

(a) Loss of metal thickness either by localized pitting or large area corrosion, when such loss exceeds .005 inch for a cold drawn cylinder, or 1/32 inch for a hot forged cylinder.

(b) Loose scaly material on the outside of the cylinder which freely breaks away upon hammering or jolting of the cylinder.

(c) Foreign deposits or inclusions adhering to the outside cylinder wall or bottom. If cylinder is found to be usable, the date of test shall be stamped under the original date of test on the dome of the cylinder.

Recharging

Cylinders to be recharged should first be completely discharged. This discharge outlet shall be equipped with a suitable device to prevent recoil of the unit. If a cylinder has a ruptured safety disc, due to excessive pressure caused by high ambient temperatures, the safety disc shall be replaced with one obtained from the manufacturer of the cylinder assembly.

Cylinders subjected to a hydrostatic pressure test or devalved shall be dry internally and free of rust. Foreign material should be removed before being recharged.

If for any reason the valve has been removed from cylinder when reassembling valve to cylinder, proper torque as specified by the manufacturer of the extinguisher shall be applied. If the cylinder is equipped with a syphon tube make certain that this syphon tube is intact before reinstalling the valve. Thread compound as recommended by the manufacturer of the system should be used and applied only to the male threads.

The carbon dioxide supply may be either a cylinder or a liquefier. In both cases, the supply should be in a liquid state and be of a temperature of between 0° Fahrenheit and 88° Fahrenheit.

The cylinder should be placed on a scale to record the weight of the carbon dioxide entering it. The weight of the carbon dioxide shall be within the limits specified by the manufacturer of the equipment.

After cylinder is fully charged, it shall be placed under water and observed until certain there is no leakage. After leakage test, all traces of water shall be removed. If valve requires repair, unit shall be discharged before proceeding.

Recharging work shall be done under capable supervision.

Cylinders should not be located in temperatures in excess of 130° Fahrenheit as this may cause rupture of the safety disc due to excessive pressure. If the ambient temperature is expected to exceed 130° Fahrenheit, the cylinder will be undercharged in accordance with the recommendations of the manufacturer of the particular unit.

Complete copies of the "Safety Code for Inspecting, Recharging and Maintaining Fixed High Pressure Carbon Dioxide Fire Extinguishing Systems" can be obtained from the Fire Equipment Manufacturers' Association, Inc., 1 Gateway Center, Pittsburgh 22, Pa. Left picture: Pyrene—C-O-Two Division, Fyr-Fyter Co.; Right picture: Walter Kidde & Co. Inc.

Members of the audience are given an opportunity to use the extinguishers after the demonstration is over. Here industrial safety man puts out fire.

fire school goes to the students

THE FIRE—

With the fire extinguisher at ready, fire fighter moves toward flaming oil.

THE APPROACH—

The instructor opens up against the flames with a chemical extinguisher.

FIRE'S OUT—

Seconds later, the roaring oil-fed flames have been fully extinguished.

The student of fire fighting no longer has to "go" to school because it literally is going to him. That's one of the important features of a mobile set-up that gives industrial, municipal, and volunteer firemen advanced training in the use of portable extinguishers. The school is the only one of its kind, according to Buffalo Fire Appliance Corporation of Dayton, Ohio, which started the program last year.

In actual practice, the "school" amounts to eight schools in one. Each is presided over by a Buffalo representative, who conducts the class wherever it is requested.

Many Demonstrations

Approximately 350 "mass" demonstrations were staged the first year under the auspices of local distributors. On top of that, hundreds more demonstrations were put on for small groups such as volunteer fire departments at special request.

The school features the latest in portable demonstration equipment that is vastly superior to the antiquated pots and pans of the past. Heart of the equipment is a special portable rig developed to operate on LP-gas. The rig, which fits into the trunk of an auto when dismantled, can simulate some of the most dangerous and hard-to-handle gas and oil fires. These include fire in a ruptured underground oil line,

flaming liquid shooting from a broken pipe flange and flames bursting from an open pipe and rebounding from a nearby wall.

Hazards like those require more than a cursory knowledge in the use of extinguishers. More important, training in combating them is difficult to set up because of the equipment required. In fact, training in this field has gone begging, even at some of the larger industrial firms, for lack of proper equipment to simulate the conditions.

Traditional Test Inadequate

The Buffalo company believes that the traditional fire demonstration is acceptable for rudimentary training but is inadequate to illustrate tough hazards which challenge industrial safety departments today. By and large, the usual demonstration equipment consists of pails, tubs, vats and similar receptacles filled with burning oil or other liquids.

Industrial and municipal fire officers, however, have been looking for additional demonstration equipment to train their personnel. Those who attend the new type demonstrations have an opportunity to pick up valuable information which, in turn, can be passed on to their staffs and down the line.

Thus, the demonstrations are being used by a number of industrial firms as an integral adjunct to their in-plant training. Many safety officials have been impressed by the versatility of the LP-gas rig and have borrowed it for short periods to train their men. A Detroit oil company, for example, held 47 demonstrations for its employees. Another company used it throughout Fire Prevention Week. In some cases, Buffalo representatives have gone into plants with the rig to conduct the classes themselves.

Attendance

Attendance at the demonstrations has averaged 100, but the groups are select. It is estimated that general demonstrations were put on before a total audience in excess of 30,000 the first year.

The LP-gas rig is a series of seven rubber hose lines, six of them with metal outlets simulating different types of fire hazards. The seventh line leads to a regular LP-gas cylinder and feeds the liquid petroleum to the other lines. When valves are turned on and a torch is applied to the outlets the resulting fires roar at temperatures as high as 2400 degrees Fahrenheit.

Techniques Shown

The demonstrations begin with a brief talk on the techniques of using extinguishers on the hazards to be demonstrated. Then, using dry chemical extinguishers, the Buffalo demonstrator shows how each of the blazes is best approached and put out.

An important part of the program is that members of the audience are afforded an opportunity to use the extinguishers under the supervision of the demonstrator. With this experience under their belt, they can return to their plants to show others the technique. At one demonstration, practically every man in a 75-man audience tried his hand at the extinguisher.

The demonstration ends with a question and answer period. Usually, the questions are of a type that the officers present would expect to get from their staffs.

Pictures by courtesy of Buffalo Fire Appliance Corp.

Annual Meeting of National Fire Protection Association

What's being done about the threat of fire to people in their homes, at work and in all their daily activities?

The answers—those known—will be presented and discussed by the world's leading fire protection authorities in Los Angeles (May 20–24) at the 61st Annual Meeting of the National Fire Protection Association. Progress toward the many answers still being sought will be reported upon and the week-long fire safety conference will also hear plans of new efforts to safeguard man from fire.

An attendance of 2,000 fire experts and interested persons is expected at the Los Angeles Hotel Statler where the meeting will take place.

Fire matters to be treated by the international fire safety group will include building for fire safety, industrial fire protection, enforcement of fire laws and regulations, electrical fire safety, aviation fire safety, fire detection and extinguishment; also fire problems of atomic energy, municipal fire protection, rural fire protection and the fire problems of flammable liquids and gases.

General chairman of a group of committees sponsoring and assisting in the preparations for the NFPA conference is Chief Engineer William L. Miller of the Los Angeles Fire Department.

Fire-Fighting School

Ansul Chemical Company has announced it will offer advanced training in fire-fighting techniques for the eleventh consecutive year. A series of 12 three-day courses will open May 20 at Ansul's 10-acre proving ground in Marinette, Wisconsin. Classes, which are filling rapidly, will extend throughout the summer, with the final session scheduled to begin September 30.

Trainees will work with all types of Ansul dry-chemical fire-fighting equipment, ranging from small hand units to high-capacity stationary and mobile extinguishing systems. Other type equipment also will be used.

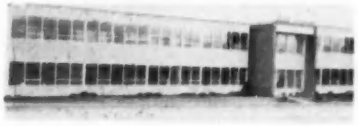
Courses are open to industrial plant safety personnel, fire marshals, municipal and military fire fighters and other interested personnel. Special fire-fighting problems may be presented by students. To guarantee maximum benefit to trainees, the size of the classes is limited to 25 men each. Reservations may be made on a first-come, first-served basis, through Ansul salesmen and distributors or by writing to Ansul Chemical Company, Marinette, Wisconsin.

Three-day classes begin on each of the following dates: May 20, June 10, June 17 and June 24, July 8, July 15 and July 29, August 12, August 19 and August 26, September 16 and September 30.

inside the trade

James J. Moore, Jr., has been named North Central area sales representative for the *PIONEER RUBBER COMPANY'S* Industrial Products Division, according to an announcement made by Pioneer officials. His representation will include the entire Pioneer line of industrial gloves.

Mr. Moore was previously associated with Bostitch, Inc., as a sales supervisor in its central division. Previously, he was with the Industrial Survey Company, Chicago, in a marketing research capacity. He attended Northwestern School of Journalism, where he specialized in Business Administration.



SCOTT AVIATION'S expansion program in respiratory equipment is marked by the completion of its new office building adjoining the manufacturing plant in Lancaster, New York. The modern structure affords nearly 6000 sq. ft. of working space for Sales, Purchasing and Production Control Departments. In addition to accommodating the growing administrative staff, the new building releases space for the expansion of the Engineering, Production and Accounting Departments. This new addition brings the total Scott facility to nearly 50,000 sq. ft.

Fifty years ago, ingenuity, enterprise and a can of sewing machine oil helped the *PYRENE COMPANY* of Newark, N. J., establish the modern-fire-protection in industry in America.

In the early 1900's a Scotsman named Peter G. MacGregor was employed by a tool company on New York's Center Street. He conceived the idea of developing a portable fire extinguisher superior to any then on the market and set to work in his shop at home to devise a suitable pump and container.

A fellow worker, E. M. Davidson, who had a knowledge of chemistry, suggested that MacGregor use a vaporizing liquid chemical in his new extinguisher instead of water, the only substance then in use. Davidson pointed out that this chemical was ideal for fires started by a new-fangled invention called electricity.

The first extinguisher MacGregor turned out was a crude but effective device consisting of a tin cylinder and a simple piston pump. It was the first portable chemical fire extinguisher in America.

The two inventors formed their own company in 1907. The name Pyrene was derived from the Greek word "pyros," meaning fire. The company operated on a small scale until 1909 when the predecessor of today's Pyrene company was incorporated in Delaware. In the years that followed, Pyrene grew apace with the fire-protection industry it helped create. In 1933 it affiliated with the C-O-Two Fire Equipment Company and recently became the Pyrene-C-O-Two Division of the Fyr-Fyter Company, Dayton, Ohio.

RESEARCH-COTTRELL, INC., of Bound Brook, New Jersey, designer and manufacturer of electrostatic and mechanical gas-cleaning equipment, has announced the addition of the Aerodyne dust collector to its line. The Aerodyne was formerly manufactured by the Aerodyne Development Company of Cleveland, Ohio.

Melvin E. Shepherd, who for five years has been Manager of the Washington, D. C. Branch Office of *NUCLEAR-CHICAGO CORPORATION* has been made General Sales Manager of the company, with headquarters in Chicago, according to announcement by President *James M. Phelan*. Mr. Shepherd will direct both domestic and foreign sales. *W. J. Lepeska*, Manager of Nuclear-Chicago's Branch Office in Dallas, Texas, will become the Washington, D. C. Branch Manager.

To provide better service to rapidly-expanding industry of Venezuela, *MINE SAFETY APPLIANCES COMPANY* has established a wholly-owned subsidiary in that country.

The new firm, *Mine Safety Appliances de Venezuela C. A.* will handle all sales and service in Venezuela, with Walco S. A., also a Venezuelan corporation, as sales agent. Three warehouses will be operated at Caracas, Maracaibo and Puerto La Cruz.

Construction of a new product and process development laboratory and further expansion of other facilities of the

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FOR SAFETY SAKE specify Safe-Hi LADDER CLIMBERS

Worker can climb tower ladder with continuous safety. Permits working with both hands on repair, maintenance and construction jobs from fixed ladders. Easy, natural, safe and inexpensive.

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(Use Key # D-35 on Inquiry Card on page 73)

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630 HIGH STREET
BUFFALO 11, N. Y.

(Use Key # D-36 on Inquiry Card on page 73)

Silicone Products Department of the *GENERAL ELECTRIC CO.*, has been announced by Dr. Charles E. Reed, general manager.

Expected to be ready for occupancy in January, 1958, the laboratory is part of a $3 million capital outlay planned for the Waterford plant during 1957. Dr. Reed described the current expansion as part of a planned increase of all department facilities needed to study and manufacture silicone products to meet increasing industrial and consumer needs.

Reginald L. Johnson has been elected Vice President of *JOHNS-MANVILLE SALES CORPORATION*. In his new post he will head up all Johns-Manville advertising and sales promotion activities as Sales Promotion Manager, succeeding H. M. Shackleford, who has retired after nearly 30 years service.

Charles W. Wheeler has been appointed to manage solvent sales for the *Chlorinated Products Division* of *DIAMOND ALKALI COMPANY*, Cleveland, Ohio, it was announced by L. J. Polite, Jr., divisional sales manager.

At his new post, Wheeler will be responsible for sales of Diamond solvents produced at Painesville (Ohio); Belle, West Virginia, and Houston, Texas. These chemicals include perchlorethylene, carbon tetrachloride, ethylene dichloride, fire extinguisher fluid, cholorform, methyl chloride and methylene chloride.

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Two Tone Jewelers Bronze Etching on Genuine Walnut Shield. 7¾" x 7¼".

SD-3 SAFE DRIVER $6.50

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• • •

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(Use Key # D-37 on Inquiry Card on page 73)

C. M. Donahue

E. W. Merry

Election of *C. M. Donahue* and *E. W. Merry* as group vice presidents of *MINE SAFETY APPLIANCES COMPANY*, manufacturer of safety equipment, was announced by *J. T. Ryan, Jr.*, president of the firm.

Mr. Donahue will head the Mining Products and International Group and Mr. Merry, the Industrial Products Group. Each group has complete responsibility for engineering, manufacturing and sales of products assigned to it.

Mr. Donahue joined Mine Safety Appliances Co. in 1927. He is a graduate of Pennsylvania State University. In 1946, he was named manager of the firm's Mining Department and became manager of the International Division four years later. He was elected a vice president in 1953.

Mr. Merry received an AB degree in economics at Harvard in 1934. He joined the company as manager of market research in 1936, following graduation from Harvard's Graduate School of Business Administration. After serving in various posts in the company, he was named director of sales planning in 1946.

Appointment of *Charles J. Simon* to manager of sales for industrial television in the *GENERAL ELECTRIC COMPANY'S Technical Products Department* was announced by *Frank P. Barnes*, manager of marketing for ITV. Mr. Simon formerly held a similar position for the Department's line or radio and television broadcast equipment.

In his new position, Mr. Simon will organize and maintain a nationwide staff for sales and servicing of the Company's line of closed-circuit TV equipment, both color and black-and-white. Closed circuit television is finding increasing use by the military, medicine, industry and education.

RELIANCE STEEL PRODUCTS COMPANY of McKeesport (Pittsburgh district) Pennsylvania announces the opening of a district office at 250 East Forty-Third Street, New York City. *John Karboska* has been appointed district manager for the company's steel grating, bridge flooring and steel mill equipment.

Safety Appointments

Robert A. McVety, Director of Safety for *REMINGTON RAND, INC.*, New York City, has been appointed a member of the Industrial Advisory Committee of the National Society for the Prevention of Blindness.

The appointment was made at the Society's annual meeting in New York. *Joseph E. Nichols*, Director of Safety for *REYNOLDS METALS COMPANY*, Richmond, Va., was reelected to the Board of Directors.

The Industrial Advisory Committee, composed of management, labor, and safety authorities, guides the development of the Wise Owl Club, national eye safety organization, and other phases of the industrial program of the National Society for the Prevention of Blindness. All committee and board members of the Society serve without compensation.

AMERICAN CAN COMPANY has named *Frank W. Dolence* as supervisor of health and safety for its Atlantic division. *E. M. Pell*, division manager of industrial relations, said Mr. Dolence would be responsible for health and safety activities in 19 American Can locations on the Eastern seaboard, with headquarters in New York.

Mr. Dolence has had considerable experience in health and safety work during his 22-year career with the container firm. He has been employed in Canco machine shops at Waukegan, Ill. and Geneva, N. Y., and recently was responsible for personnel activities at the company's Newark, N. J., machine shop. He succeeds the late L. Carl Meskimen.

Dr. L. J. Buttolph, well known electrical engineer, has been appointed executive secretary of the National Noise Abatement Council, President Martin Hirschorn announced recently. Dr. Buttolph recently retired from the General Electric Company after 38 years of service, largely in the field of illumination.

In his new post, Dr. Buttolph will direct the Council's efforts to reduce or eliminate the noise plague in industry, city streets, offices and homes through the promotion of National Noise Abatement Week, sponsorship of annual noise symposiums, award of Achievement Plaques to cities conducting outstanding educational noise reduction campaigns, awards of merit to industries with noise abatement programs, and dissemination of information on noise reduction to city officials, industries, educational institutions and individuals. The Council was organized in 1941 and has since spearheaded the cause of noise reduction.

Material appearing in this section is published as information and is not intended to imply endorsement or guarantee by SAFETY MAINTENANCE.

To obtain descriptive literature of products listed, use Reader's Inquiry Card. Write in code number given each item. Send written requests to: Service Dept., SAFETY MAINTENANCE.

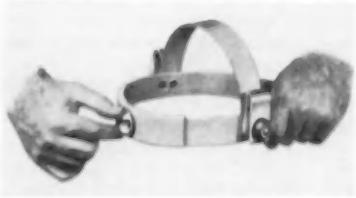
what's new for MAY

SMALL-SIZE DRY CHEMICAL EXTINGUISHERS

(Use Key # 830 on Inquiry Card on page 73)

A NEW LINE of portable dry chemical fire extinguishers, the smallest now available bearing approval of the Underwriters' Laboratories, has been developed by Leeder Mfg. Co., Inc. The extinguishers are available in 1-lb, 1½-lb, 2¾-lb, and 4-lb, sizes, and are intended for use against Class B and C fires. These units carry the following ratings, under the recently revised Underwriters' rating system: 1-lb, measuring only 3½" in diameter and 9¼" high, 1 B:C; 1½-lb, 2 B:C; 2¾-lb, 4 B:C; and the 4-lb is rated at 6 B:C. As indicated by the ratings, these extinguishers are for use in combating grease, oil, paint and flammable liquid fires, class B, and fires in electrical equipment and motors, Class C.

According to the company, the extinguishers are engineered for instant use by unskilled persons, with immediate, positive action assured, even at sub-zero temperatures. Their compact size and light weight provide additional convenience. The four units feature a leak-proof, double seal valve which operates on the self-closing, pressure assist principle. Wider coverage is obtained through use of a specially designed duckbill nozzle. Refill is quick, requiring no cleaning or new parts. Easy inspection is provided by a pressure gage recessed in the bottom. The company further states that dry chemical will put out more fire more quickly, pound for pound, than any other agent. It affords the operator protection from the radiant heat of fire, is non-toxic, non-abrasive, and harmless to humans and property. Small size dry chemical extinguishers are suitable for use in areas where N.F.P.A. ratings below 8 are specified, such as areas around machine tools and smaller electric motors and equipment, as well as overhead installations.



NEW HEADGEAR FOR HELMETS

(Use Key # 831 on Inquiry Card on page 73)

CHICAGO Eye Shield Co. has announced a new CESCO G1-R headgear for helmets and face shields. This is a tough plastic headgear which permits easy and comfortable fitting, according to the company. It adjusts to the required head size by a turn or two of the adjusting ratchet.

The headgear is available in a choice of long-wearing, high-impact vinyl compound or fiber. It is impervious to perspiration or chemical action and is easily cleaned. The G1-R is featured on all CESCO welding helmets and face shields.

WEDGIE-STYLED SAFETY SHOE

(Use Key # 832 on Inquiry Card on page 73)

COMFORT AND safety for the worker who is continually on his feet is said to be provided by the Flat-Tred Wedgie, a safety shoe recently introduced by Hy-Test Shoes, Div. of the International Shoe Co. The tan Wedgie (style H965) prevents fatique by supporting the entire foot. This is accomplished by means of a Resist-Oil sole and Flat-Tred wedge heel. Both the sole and heel are of cellular grit crepe which cushions the foot and offers slip resistance.

The upper leather of the Wedgie is processed with DuPont Quilon, making it resistant to water, foot perspiration and to most strong acids and industrial chemicals. According to the company, the leather remains soft and flexible even after repeated wetting and drying, retaining its shape. Three other safety shoes are also Quilon treated and include the H230, a brown plain toe oxford; H930, a tan shoe; and a tan eight inch boot, H950. Additional features include the Anchor Flange steel box toe, storm welt and leather laces. The shoe is completely dacron stitched.

FIVE-WAY SCRUBBER

(Use Key # 833 on Inquiry Card on page 73)

A VERSATILE, fully automatic machine for floor maintenance is the Lincoln Autoscrubber, offered by the American Floor Surfacing Machine Co. In a single automatic operation, the gasoline or electrically powered units can perform five jobs: spread the cleaning solution, scrub, rinse, pick up the liquid, and dry. Models are available in various sizes with scrubbing brush widths varying from 18 to 60 inches. Illustrated is the 37-inch electric model. Because of the self-propelling and automatic-operation features, the units merely have to be guided by the operator.

The units are said to clean industrial and commercial floor areas more quickly, with less cleaning solution and less water, and to permit machine cleaning during other activities. The scrubbing brushes are self-leveling and their pressure on the floor can be adjusted during operation.

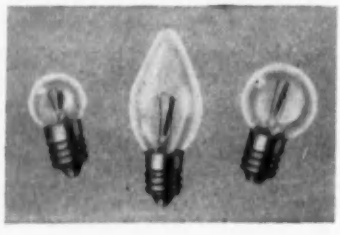
SELF-FLASHING BULBS

(Use Key # 834 on Inquiry Card on page 73)

THREE NEW lamps, each with a built-in flasher unit, intended chiefly as safety and attention-directing devices, have been introduced by General Electric's Miniature Lamp Department. Designated as flasher lamps, they are said to have a uniform and dependable flashing rate, for use in flashlights and lanterns as warning devices in the home, on the highway, and in industry.

The new flasher lamps, which have screw bases, are the first domestic types with the ability to blink on and off without a separate flasher mechanism, according to G.E. Previously, lamps were flashed by an external device which broke the circuit regularly.

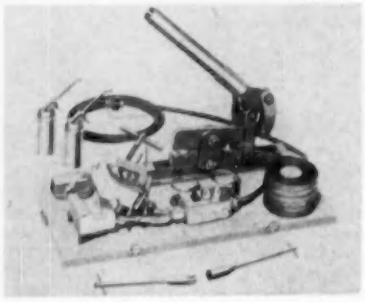
Lamp No. 405 is a rosebud-shaped clear glass bulb, rated at 6 volts, with an average useful life of 250 hours, and is designed for use in devices which plug into automobile cigarette lighters. Lamp No. 406 is a globe-shaped bulb, about the size of a grape, in clear glass, operates from two flashlight batteries and has a useful life of 30 hours. Lamp No. 407 is a globe-shaped clear glass bulb, smaller in diameter than lamp No. 406. It operates on a standard handlantern battery and has useful life of 50 hours.



PORTABLE CABLE SPLICING KIT

(Use Key # 835 on Inquiry Card on page 73)

VULCANIZED, neoprene insulated cable splices without power loss can now be produced, in the plant or in the field, in minutes with a portable cable splicing kit manufactured by CAM-LOK Div., Empire Products, Inc. The new 110-volt kit is said to make permanent cable splices which are flexible, waterproof and shockproof. To use



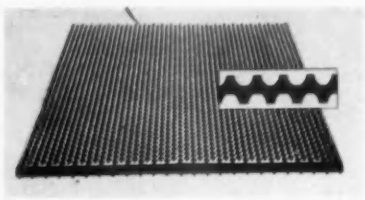
the kit, the cable insulation is stripped back, and the bare ends of the cables are then inserted in a copper tube and crimped with the high pressure crimping press in the kit. An inner sleeve is placed over the crimp to eliminate voids and to keep the splice flexible. An outer sleeve is then vulcanized to the cable jackets to prevent moisture from entering and damaging cable, and, at the same time, eliminate the problem of cable jackets pulling away from the splice. Production delays are eliminated since splices can be made anywhere.

Tests conducted showed that conductivity of the splice is as good as the cable itself. The completed splice is tapered, and only slightly larger than the cable. It will not catch on obstructions when dragged. Finished insulation of the splice will withstand 2,500 volts without any leakage, according to the company. The kit includes crimping press, cable cutter and vulcanizing mold, and can also be used to make rubber insulated cable connectors.

ANTI-FATIGUE MAT

(Use Key # 836 on Inquiry Card on page 73)

THE KEATON Rubber Co. has announced the Lifetime Rubber "Stand-Ease" mat designed to relieve fatigue and to provide a safe, non-skid area at the work position. The cushioning effect is achieved by molded arch supports alternately placed on each side of the mat (see cross-section) which provide a full ¾" thickness of resilient



rubber to absorb pounding and vibration effects. This energy-conserving, anti-fatigue result reduces the frequent pauses for rest and tends to cut down work-lag, foot fatigue and absenteeism.

The raised surfaces on both sides also serve to keep the worker's feet clear of floor liquids and dirt. Accident hazards and personal injuries are reduced by its non-skid safety construction. Used in a series, the mats provide continuous, protected working areas for machine and tool shops, plants, laboratories, etc.

ROOF VENT FOR FIRES

(Use Key # 837 on Inquiry Card on page 73)

A NEW quick-opening roof vent to permit rapid escape of smoke, heat and gases in the event of fire has been announced by The Swartwout Co. The unit, known as the Pyrojector, is installed and operated entirely above the roof line. Two double-wall dampers are opened outward by powerful coil springs when a fusible link melts at 212° F., creating a roof opening of 28 sq. ft. This relief near the fire source is said to help to limit the horizontal spread of flames and makes fire fighting

more effective by revealing the location of flames.

Pyrojector is completely weatherproof when closed. It can be used for extra ventilation in good weather. The unit can be installed singly or in groups above most likely fire sources.

AUTOMATIC PROCESSES MONITOR

(Use Key # 838 on Inquiry Card on page 73)

A SAFETY shutoff and alarm for automatically controlled processes which requires no sensing elements or electronic

(Continued on page 75)

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE. To obtain copies write in the key numbers on the free-postage card below.

FIRE PROTECTION

Fire Extinguishers 300

Buffalo Fire Appliance Corp. Illustrated folder graphically describes the new Underwriters' Laboratories ratings as they apply to a brand of extinguishers. The ratings designate the efficiency of each extinguisher, based on standard UL tests.

Dry Chemical Extinguisher 301

The Fyr-Fyter Co. The 10 lb. pressurized dry chemical extinguisher featured in this informative bulletin can be re-pressurized with dry nitrogen or air from any airline. Information includes detailed specifications for the extinguisher.

Fire Detection Units 302

Fenwal, Inc. 4-page illustrated brochure on unit fire detectors which operate on a rate-compensation principle. Described are the various models available, their physical and electrical specifications, listings and approvals, etc.

Fundamentals of Extinguishment . 303

Ansul Chemical Co. Highly-informative brochure on the fundamentals of fire extinguishment. It explains the three elements necessary for fire, the standard classifications for various types of fires, and the characteristics of flammable liquids. The brochure emphasizes the importance of fire classification in that it determines the manner in which a fire must be put out.

Fire-Resistant Hydraulic Fluid .. 304

E. F. Houghton & Co. Explained in this 8-page, illustrated booklet is a brand of fire-resistant hydraulic fluid for use in hydraulic equipment operating under pressure near open flames, high heat, etc. Detailed are its physical properties, viscosity characteristics, installation procedure, applications, and other data of interest.

PERSONAL PROTECTION

Safety Clothing & Footwear 305

Plesco Safety Products Co. Informative bulletin explains a line of safety clothing including boots, aprons, mittens and hand pads. The descriptions, which are accompanied by illustrations, include prices for the various garments.

Safety Goggles 306

Eastern Safety Equipment Co. High impact and pierce resistant safety goggles are featured in this illustrated bulletin. The nylon eyewear, said to be tough and durable, is non-flammable, can be worn over prescription glasses, and features interchangeable lenses.

Rubber Footwear 307

Lehigh Safety Shoe Co. Fully-illustrated catalog explains a wide line of rubber footwear suitable for many industrial applications. Information is given regarding construction features, sizes available, and ordering of the boots and shoes.

Face Shields 308

Pulmosan Safety Equipment Corp. A series of face shields is detailed in this informative bulletin. Included are illustrations, and data on replacement parts, available visor styles, etc.

FIRST AID & HYGIENE

Pressure Bandages 309

A. E. Halperin Co., Inc. All-purpose pressure bandages which can be firmly applied to serious wounds without danger of the dressing slipping off. The bandages are available in several sizes and can be used on any part of the body including difficult-to-bandage areas such as the chest wall, groin, axilla, etc.

Stretcher-Type Carrier 310

Sarole, Inc. 4-page brochure details a stretcher-type carrier for injured personnel which does not require lifting and placing the victim upon the carrier. Rather, the parts of the carrier are slipped under the victim and fastened together. The brochure points out that any movement to a victim with a broken back or neck can result in greater damage, even death.

First Aid Equipment 311

Medical Supply Co. Fully-illustrated, highly-informative catalog exhibits an extensive line of first-aid equipment. Such items as snake bite kits, tourniquet units, burn spray kits and stretchers are detailed, along with information on ordering any of the products.

Midget Inhalator & Resuscitator 312

Continental Hospital Industries, Inc. Outlined in the illustrated folder is a lightweight (1 lb.), midget inhalator and resuscitator. The folder explains the use and care of the unit, which because of its small size and simplicity of operation is recommended for use by industrial plants, fire departments, rescue squads, etc.

Stretcher for Station Wagons .. 313

Bomgardner Mfg. Co. Stretchers and equipment to convert station wagons into stretcher-transporting units are described in this bulletin. Illustrations used help to explain the method of installation, and the efficiency of the converted station wagons.

(Continued on the next page)

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Free Bulletins (Cont'd)

Vision Testing Equipment 314
Keystone View Co. Outlined in this illustrated brochure is a line of vision testing equipment that determines eye coordination, color vision, depth perception, etc. The entire test requires some three or four minutes to complete.

PLANT MAINTENANCE

Safety Paints 315
Kelley-Mahorney Co. A line of safety paints, including skid-proof, fire barrier, reflectorized and color codes, are described in this informative booklet. Also included are application directions, prices, special paints, etc.

Masonry Water Repellents 316
Silicone Products Dept., General Electric Co. The benefits provided by silicone masonry water repellents and specifications for applying them are explained in this brochure. It shows the effectiveness of silicones in minimizing water absorption, efflorescence, spalling and cracking.

SIGNS & TRAINING AIDS

Chain & Track Signs 317
Nette Safety Appliances Co. Interchangeable plastic letters that can be fitted in a track or suspended by chains to form vertical or horizontal signs are featured in this booklet. Detailed information is given regarding lettering and design, sizes, colors, accessories, prices, etc.

Flannel Board Training Aids 318
L. A. Whitney Associates Inc. Featured in this illustrated brochure is a line of safety training kits consisting of a flannel presentation board, carrying case and symbols. Kits dealing with specific safety topics are available, such as traffic safety, farm safety, industrial safety, etc.

Changeable Letter Signs 319
Wagner Sign Service, Inc. Illustrated bulletin explains changeable letters that are attached to a single or double rail. The letters can be mounted flush or projected from the background, and are available in a choice of type styles, sizes and colors.

What's YOUR Problem?

- **Has an accident or fire interrupted production?**
- **Want to know how to prevent it?**
- **Do you need background information on equipment for industrial safety, hygiene, or maintenance?**

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the preceding page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

Key Number	Subject
	PERSONAL PROTECTION
101	Safety Goggles
102	Face Shields
103	Lens Cleaning & Anti-Fogging Equipment
104	Sweat Band
105	Hard Hats
106	Respirators & Masks
107	Protective Clothing
108	Women's Protective Clothing
109	Safety Belts
109A	Vehicle Safety Belts
110	Safety Gloves
111	Foot Protection
112	Anti-Slip Soles
113	Oil-Proof Soles
114	Welding Helmets
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WHAT'S YOUR PROBLEM?

circuitry has been introduced by Damol Corp. Designated the Impulse Monitor, the device is claimed to provide a complete, safe shutdown of the process, sounding an alarm in the event of controller failure in the "on" period, abnormal "off" period or fusing of the power contactor.

Although the present models are designed primarily for heat treating furnaces, the company states that the principle of the monitor can be applied to any process involving heat, pressure or flow where the control system uses an on-off, two position or pulsing type of control mode and where the input is of reasonably uniform duration. The device operates independently of furnace temperatures. By shutting off the process when abnormal conditions arise, the monitor prevents furnace burnouts and the destruction of tools and dies. The operation of the monitor is a direct function of the signal from the automatic controller. It can be wired to operate an external alarm circut or to signal failure over telephone lines or protective agency equipment. A toggle switch permits by-passing the monitor during the initial process rise and during erratic charging of the process. The monitor must be reset manually after each safety shutdown, thus permitting the examination of the control equipment to determine cause of failure. Three models are available: Model 202B, Model S-203A and Model S-204A. All components of the three models are approved by the Underwriters' Laboratories.

STEEL CANS & PAILS

(Use Key # 839 on Inquiry Card on page 73)

NEW stainless steel cans and pails, recommended for use where health and sanitation requirements are rigidly enforced, have been developed by The Witt Cornice Co. The containers are ideal for food and chemical processing, pharmaceutical manufacturing, canneries, meat packing, fisheries, hospitals, laboratories, etc.

Constructed of 24 gauge type 304 stainless steel with a 2B finish, they are equipped with ⅛" x 2-¼" stainless steel plain bands at top and bottom. A snug-fitting lid locks out foreign matter, yet can be quickly removed. The cans are available in 12-¼, 16, 20, 27 and 33 gallon sizes. Pails are sized in 5, 7, 8-¼ and 10 gallon capacities.

DRAIN CLEANERS

(Use Key # 840 on Inquiry Card on page 73)

A NEW solution for the prevention and treatment of clogged drain lines and grease traps has been made available by the Suburban Products Co. Sea-Chem, a fish-gland derivative providing enzymes in powder form, is simply flushed down the drain. It eliminates the manual cleaning of the grease trap and rodding of lines by digesting grease and reducing it to harmless acids which flow off down the drain. Available in one pound containers, the product is claimed to prevent odors and eliminate replacing of drain lines. It is non-poisonous, non-caustic and harmless to plumbing.

A companion product to Sea-Chem is Sea-Cal for digesting sewerage wastes in septic tanks, cesspools and other sewage systems. Utilizing bacteria action, it liquidizes wastes, preventing odors, clogging, overflowing, etc. Sea-Cal is also available in one pound containers.

SPRING-LOCKING SCAFFOLDING

(Use Key # 841 on Inquiry Card on page 73)

LIGHT DUTY scaffolding featuring a stainless steel spring lock has been introduced by the Carmic Mfg. Co., Inc. Designated Saf-T, it is light in weight and suitable for painters, contractors and maintenance crews. According to the company, one man can move an entire section of the scaffolding.

The scaffolding frames are made of high carbon steel for strength and durability, and are said to support loads up to 50 lbs. per sq. ft. They feature built-in ladders and spring locks, eliminating the necessity of loose parts and tools used in erecting the scaffolding. Scaffolding sections include four parts; two frames and two pivotal cross braces. Open stock design permits erection to any desired height or length. To dismantle, the spring lock is pulled and the cross braces removed. Accessories such as guard rails, platform supports, locking casters, etc., are available from the company.

TRUCKING FLOOR RESURFACER

(Use Key # 842 on Inquiry Card on page 73)

A NEW flooring material compounded especially for use in high speed hand and power trucking locations, is announced by The Monroe Company, Inc. Known as "Sternite," it is applied in a ¼-inch layer over concrete and is said to form an extremely hard surface that eliminates all wheel drag and will not depress under wheels.

Sternite is reputed to contain an unusually pure liquid emulsion, newly-discovered combinations of cements, plus specially prepared flinthard aggregate. It is furnished in 250 lb. units ready for mixing. The material is dark brown in color and said to be non-slip, non-porous, lightweight, fire-retardent, wear resistant, easily applied by even the most inexperienced workmen and easily feather-edged. It is claimed to withstand loads of 3,000 lbs. per sq. inch after 48 hours. This is equivalent to a 24,000 lb. load on a truck with four 2-inch steel wheels.

BUTT-SNUFFER

(Use Key # 843 on Inquiry Card on page 73)

THIS ALL-STEEL ash tray is designed to be fastened permanently to walls, posts, or columns to encourage better housekeeping and cut down fire hazards resulting from carelessly tossed cigarette butts. Called the "Butt-Snuffer," it is made by Safety Floor Products.

It is finished in fire engine red, and is easy to maintain. The tray may be filled with either sand or oil absorbents and cigarette butts can be sifted out with a cleaning screen that is stored in a clip below the tray. The unit is available in two sizes: 8" x 5¼" x 6¾", and 14" x 7" x 8".

CONCRETE SEALER

(Use Key # 844 on Inquiry Card on page 73)

A NEW low cost method of sealing, damp-proofing and preventing water seepage through concrete floors in industrial plants or multiple story and underground parking areas, is announced by Maintenance Inc. Suitable for use in either existent buildings or in new construction, the method employs 2 coats of Jennite J-16 surface seal preceded by a special penetrating primer. The sealer is applied in accordance with specifications developed in cooperation with architects, builders, government officials and industrial maintenance experts. Both primer and sealer can be applied by brush, squeegee or spray.

Use of Jennite J-16 is said to eliminate the necessity for applying membrane and an asphalt overlay on new concrete on old concrete decks in many instances. It is a tough, resilient, heavy-duty coating that is claimed to withstand the attacks of most chemicals used in industry. It is impervious to water and resistant to petroleum derivative including gasoline and oil. It is spark proof, stops the dusting nuisance of concrete and is easy to clean. The sealer is available in 5-gallon cans, 30 and 55-gallon drums.

PLASTIC FRAME SAFETY SPECTACLES

(Use Key # 845 on Inquiry Card on page 73)

THE NEW S-7 square shape plastic safety frames in bronze or crystal pink feature modern styling, light weight and comfort according to the manufacturer, the U. S. Safety Service Co. Safety lenses in opilite (lightweight plastic safety lenses) and hardened glass are available in plano or to any prescription to correct vision. Standard shades of green and rose tint

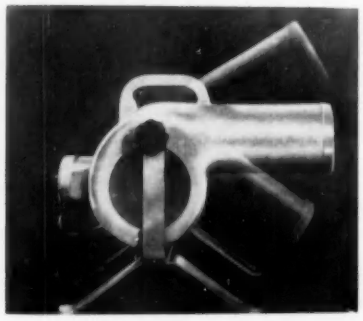
safety lenses are also available. Two temple types, plastic spatula, and the riding bow cable come in choice of lengths. Four eye-sizes and five bridge-sizes and adjustable or fixed nose pads, simplify equipping employees.

Rugged bridge design is said to make the S-7 frame stronger, while holding lenses in straight alignment to safeguard against prism effects. Safety crosses on each temple identify the glasses as safety spectacles. The entire safety spectacle meets federal specifications.

PORTABLE HEATER DRYER

(Use Key # 846 on Inquiry Card on page 73)

THE CONTINUOUS or intermittent blast of air required for so many industrial purposes is said to be provided by a new



lightweight heater dryer machine called the Jet Blower. Introduced by the Ullman Products Corp., the unit features 3-way heat control (hot, cool and warm) and has an output of 2400 FPM.

Two models are available, both of which are portable and compact, the stand-swivel weighing eleven pounds, and the hanging model weighing ten pounds. Both models feature a ball bearing brushless type motor that is self-cooling, a heavy duty heating element, and a cast aluminum body designed for quick disassembly in maintenance. All moving parts are protected by enameled steel screening. The heater dryer operates on 115 volts 60 cycles.

CENTRIFUGAL DUST SEPARATOR

(Use Key # 847 on Inquiry Card on page 73)

A HIGH-efficiency centrifugal dust separator known as the DAY "HV" has been announced by The DAY Co. It is completely welded and made of heavy gauge black iron. Designed for high efficiency, the path of the dust laden air traveling through the "HV" encounters a minimum of turbulence due to the scroll inlet and airfoil design inlet vane. A steep, smooth cone is said to assure uniform and quick delivery of the dust to the dust outlet. All these factors result in an improved cyclonic dust collector with low resistance requiring less fan power, the company claims.

The separator has a wide range of applications. The durable construction of this

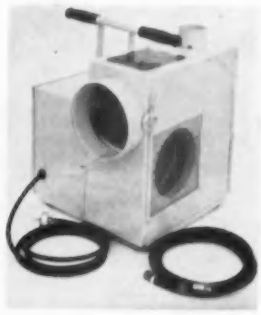
unit permits handling of fibrous, granular, abrasive, fine or coarse dusts at normal or high temperatures. It can be used on pressure or vacuum. Units made of stainless steel are available if required. Twenty standard sizes are available. Groupings of any sizes can be furnished to handle any volume of air from 150 CFM upwards.

STEEL PLATE HANDLING TOOL

(Use Key # 848 on Inquiry Card on page 73)

THE "Super-R-Guy" Safety Turn Bar, a tool designed for use in place of dangerous, homemade pinch bars for turning steel plates and shapes, has been introduced by the Guibert Steel Co. The bar is suitable for shop or yard use where hoist and crane facilities are inadequate or overloaded, for warehouse operations and for handling steel on the job site. The bar is really two tools in one. Its chisel end can be used to separate closely stacked plates and shapes.

Properly used, the Safety Turn Bar largely reduces the possibility of injuries from improper handling of steel shapes and plates. The company claims it not only makes the job easier and safer but helps cut handling time and costs. The bar weighs ten lbs. and measures 1 in. sq. by 38 in. long.



MANHOLE VENTILATOR-HEATER

(Use Key # 849 on Inquiry Card on page 73)

A NEW ventilating heater for underground maintenance operations has been announced by the Morrison-Pelsue Co. Operating on either AC or DC from a portable generator to 110 volt tap, the MoPeCo model ACM (or DCM) furnishes a constant supply of forced fresh air to manhole workers. It is said to prevent the build-up of explosive gases and oxygen deficiency.

enabling workmen to work with greater speed and safety.

The portable units weigh approximately 70 lbs. and provide from 300 to 800 cfm of fresh air for summer operations. In winter, when warm air is desirable, its propane burner can furnish a 10 to 90 degrees F. temperature rise in the manhole. Fresh air that is heated is delivered through a lightweight, flexible duct. Combustion products from the burner are discharged into the air above ground. According to the company, repeated tests have shown an absence of CO and CO_2 gases in the delivered air. An automatic gas shut-off valve is featured to cut off the gas flow in the case of power or burner failure.

LP CONVERSION KIT FOR FORK TRUCKS

(Use Key # 850 on Inquiry Card on page 73)

THE YALE & TOWNE MFG. CO. has announced the development of the first industrial lift truck LP-Gas conversion kit which bears Underwriters' Laboratories listing for "approval by report" of a field installation. Most of the Yale gasoline powered trucks currently in use may now be converted to LP-Gas by the user with a procedure and component parts which meet the UL requirements for safety in operation.

The basic components of the kit are a fuel tank, a fuel filter, LP-Gas converter-regulator, carburetor, solenoid safety shut-off valve, static pressure relief valve and the hoses and connections necessary for installation.

ANTI-RUST PAINT

(Use Key # 851 on Inquiry Card on page 73)

A NEW SPECIAL grade of its CI-88 anti-rust paint that is reputed to go on satisfactorily even over damp surfaces, is announced by Chem Industrial Co. Known as "88 Special," it combines a "heavy" bituminous alkyd base with a special penetrating vehicle. The latter is said to cut through moisture to surface metal. It is recommended for wet weather applications or use where it is virtually impossible to dry a metal surface thoroughly. Because of its ability to adhere to damp metal, it is particularly well adapted for use in coastal areas or in tropical climates where moisture is always present.

The product forms an attractive, shiny black elastic coating that resists dampness,

mild industrial acids and fumes, grease, oil, drying effects of sun, and extreme temperature changes, and retards the corrosive effects of salt water and salt-laden air. The manufacturer recommends "88 Special" for use on exterior metalwork, including standpipes, gutters, downspouts, flashings, ventilator outlets, gratings, fire escapes, sashes, covers and housings. Among its marine applications are hulls, winches, pumps, ground tackle and dry dock equipment. It also can be used on railroad freight cars, signal towers, bridges, trestles and switch mechanisms. It is available in 1-gallon cans, 5-gallon pails and 55-gallon drums. It can be applied by brush, spray or roller.

DACRON-LINED FIRE HOSE

(Use Key # 852 on Inquiry Card on page 73)

SUPER Fyr-Strype, a new first line municipal fire hose has been introduced by the Fyr-Fyter Co. The hose has built-in-protection of 100 percent pure dacron polyester fibre strips over the total outer jacket fold areas. These areas are the highly vulnerable points of standard cotton jacket hose where most wear occurs. The tough reinforcing strips provide a

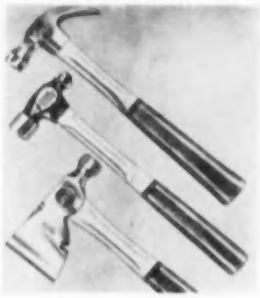
high resistance to abrasion. Added advantages include extra strengthening at key points permitting high test pressure for an extra safety margin.

The non-absorbent dacron fold strips are also said to insure complete fold and crease drying, thus giving positive protection against mildew and jacket deterioration. Flexibility of the fold strips provides easier racking and speedier unloading. Additional protection against wear is obtained by using dacron filler cords throughout the double jacket hose. This provides resistance to mildew, chemicals, and water absorption. Coupling ends are reinforced with an extra rubber lining to insure a long lasting coupling bond. The new hose is available in 50 ft. lengths, 1½ and 2½ in. diameters.

NON-SLIP HANDLED TOOLS

(Use Key # 853 on Inquiry Card on page 73)

HAND TOOLS made with handles guaranteed not to break, bend out of shape or collapse have been marketed by Fayette R. Plumb, Inc. The new line includes hatchets and prospecting picks as well as nail hammers, brick hammers, ripping



hammers, scaling hammers and machinists' ball peen hammers. The Fiberglas handles cannot rust, rot or corrode. According to the company, they are strong and light, and can be molded into the traditional grip-shape of wood handles.

The new handle is said to make it possible to achieve good balance by locating the center of gravity in a way that gives each handle the proper distribution of weight and length compatible with the weight of the metal in the head. This is an important factor in reducing fatigue on the part of the user. The grip section of the handle of each tool is covered with neoprene for comfort and safety. The neoprene prevents the tool from slipping from the hand while in use, has long wearing qualities, and resists grease, oil and sweat. The metal head of each tool is joined to the handle with Permabond which eliminates the use of wedges. Permabond is a chemical weld which binds the head and handle into one unit. Each tool is guaranteed to stay tight in normal use.

ALUMINUM STEP STANDS

(Use Key # 854 on Inquiry Card on page 73)

THREE NEW aluminum step stands have been added to the industrial line of products produced by the Louisville Ladder Co. A heavy duty cast aluminum top with a diamond pattern for non-slip protection is featured on all three sizes. The 1, 2 and 3 foot sizes indicate the vertical height from the floor to the platform top. The aluminum angle frame is fully braced and riveted. Replaceable rubber bumpers are provided on all floor contact points.

Weight of the smallest size is 6½ lbs, and the largest size is 13 lbs. These ladders have many uses in industry, offices and institutions where a sturdy, easily-handled step is required.

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